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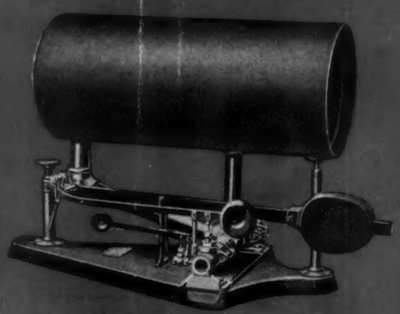

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Vol. 93

COTTON

No. 2

December, 1928

W. R. C. SMITH, Publisher
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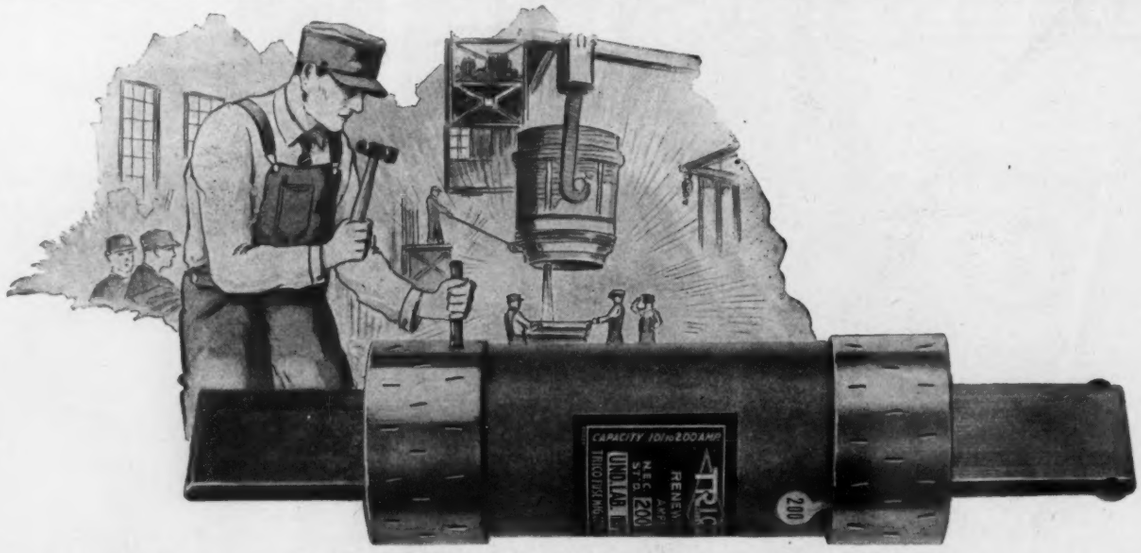
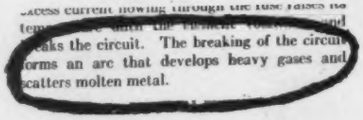
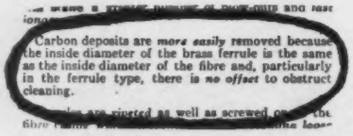


Sixty Notches on the Ferrule!



...aks the circuit. The breaking of the circuit ...forms an arc that develops heavy gases and ...scatters molten metal.

Above reprint from a booklet describing the action of a bare link when it blows, admits the scattering of molten metal. It clings to wall, pits, contact points and freezes threads. Trico does not have this trouble.



Carbon deposits are *more easily* removed because the inside diameter of the brass ferrule is the same as the inside diameter of the fibre and, particularly in the ferrule type, there is *no offset* to obstruct cleaning.

Above reprint from a circular describing the ease of removing carbon deposits from the bare link fuse described. Metal and carbon deposits act as conductors, also current wasters and must be removed. Trico stays clean; see reason given in next column.

These were made by a Steel Mill Engineer to record the number of times a TRICO Fuse would blow without injury to the casing, or scatter carbon and metal to the inside wall, contacts and cap threads. Doubtful of TRICO'S claim that TRICO fuses would be clean after blowing, also withstand blowing indefinitely, prompted this test.

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An Analysis of Loring's Textile Merger

Homer Loring

THE proverbial "two sides" of the merger question are adequately discussed in this article. After describing the Loring plan, insofar as it has been announced, the writer presents some interesting observations of the different reactions the development is creating in different phases of the industry.

But, regardless of the viewpoint, the subject of mergers is an outstanding topic of discussion in the textile field—and everyone is following Mr. Loring's movements with keen interest, because of what they will develop when they have passed the initial experimental stages.

ALL factors in the textile industry are keenly interested in the formation of the United Merchants and Manufacturers, Inc., an organization that is part of a plan fathered by Homer Loring for the rehabilitation of the Fall River cotton mills. The firm of Kidder, Peabody & Co., New York and Boston bankers, offered $5,000,000 preferred stock and 500,000 shares of the common of this company in units of one share of preferred and one share of common for $107.50 per unit. The other 250,000 shares of common were purchased from the corporation for $2,500,000 by interests identified with the management.

Through this offering the activities of Mr. Loring in the New York market came to public attention. The corporation itself was incorporated in Delaware with authorized capitalization of $15,000,000, $100 par 6 per cent cumulated preferred and 750,000 no-par common shares. The offering made by the bankers was the first given to the public. Concerning this flotation Mr. Loring said in a letter to the bankers:

"The United Merchants and Manufacturers, Inc., have acquired a substantial interest in profitable, established New York selling houses which sold during the last year over 125,000,000 yards of cotton cloth, silk and rayon, having total value of $22,000,000. These selling houses are converters, as they are known in the trade, buy unfinished grey cloth from the mills, have it styled, bleached, dyed, or printed according to the needs of their customers who include manufacturers, mail order houses, wholesalers, chain stores, and retail stores.

"The converters anticipate the requirements of their customers and buy their goods wherever purchases can be made to the best advantage. Well managed converting houses have been able to show satisfactory profits even during recent years.

"It is proposed to purchase either in the North or South a limited number of finishing plants to bleach, dye and print and a few selected mills specializing in products being sold in large quantities by the selling houses. These finishing plants and mills, in conjunction with the selling houses, will be in a position to handle every step from the purchase of the raw materials to the sale of the finished merchandise.

"The large volume of sales of the selling houses insures continuous full-time operation to the finishing plants and such mills as may be acquired. The mills included in the organization will not be compelled to seek a market for their goods and the selling houses will be assured of quality, service and low cost.

"I am confident that upon confirmation of the above plan, the earnings will be more than twice dividend requirements on the corporation's preferred stock even if the present textile depression is prolonged. Improvement in the general textile situation should place the corporation in a position to make a substantial profit."

The three converting houses referred to that have become a part of the United Merchants and Manufacturers plan are what were formerly known as the Cohn, Hall, Marx Co. of which Lawrence Marx was president, the York Textile Co., and the Seneca Co. The Seneca and York companies have been merged into a new corporation and an issue of $5,000,000 6 per cent cumulative preferred stock and 300 shares of common stock have been issued. The first issue was used to take over the business of Cohn, Hall Marx Co. and the second issue to take over the business of the York and Seneca organizations.

The organization of the three companies has been retained although August Viet, the founder of the York Co., has withdrawn from active management, and Mr. Rosenthal and his son, of the Seneca, have withdrawn. All three companies were among the converting houses that showed earnings last year.

Homer Loring*, who is the active factor in planning this new textile development first became interested in the textile industry through the efforts of men associated with the First National Bank in Boston and holding interests in Fall River properties. His first move was to bring about a consolidation of three banks in that city, the Metacomet, Massacoit-Pocasset, and First National into a group now

known as the B. M. C. Durfee Trust Co. This merged organization came into the possession of a great deal of mill paper, some of which is non-liquid although well secured by mill endorsement.

It was at first assumed that he planned a large merger of Fall River mills but this did not prove to be the case. He has engaged two or three mill men formerly employed at New Bedford to make a practical examination of various Fall River properties that are virtually in the hands of the bank as a creditor. From time to time reports have been circulated that he is to take over one mill or another. As late as November 5th it was only known definitely at Fall River that Mr. Loring and his associates have offered to take over the Arkwright Mills, the offer being wholly dependent on whether the city will grant a substantial abatement of its $150,000 tax claim against the corporation.

In case the desired abatement is granted the Loring interests are willing to pay the stockholders of the corporation $5.00 per share for their stock and pay the creditors 40 per cent in addition to the 15 per cent they have already received. If the deal goes through, the plant will be equipped with $200,000 worth of new machinery for the manufacture of specialties such as are not made in any of the local mills and the plant will be run on two shifts of eight hours each.

The mill owes about $340,000 in addition to tax claims and if forced to liquidate, it has been estimated that the stockholders would not get anything and the creditors would not get much more than 55 per cent. It is a mill of 60,000 spindles. Other mills reported to be under consideration for similar treatment are the American Linen Co. (a cotton mill), the Granite Mills, Stafford, and Merchants mill.

A short time ago stockholders of the King Philip Mills, a very prosperous fine goods mill in Fall River, were offered $175 per share for their holdings by an unknown bidder. The treasurer passed the offer along to stockholders without comment but it is now stated that the control of the corporation rests as before the bid was received. This mill has a surplus in excess of its capital and has been a consistent dividend payer for 50 years. Reports also stated that the Loring interests were seeking the Lincoln, Parker, Davis, and some other fine goods mills but these reports have been denied by the officials.

Earle P. Charlton, a Fall River man who is a large stockholder in the Charlton Mills, vice-president of the Woolworth, and said to be the largest individual stockholder of the N. Y., N. H. & H. R. R., and Louis K. Liggett, head of the United Drug Co., also a holder in some Fall River properties, are associates who are cooperating with Mr. Loring in handling the Fall River problem.

Beyond the statement quoted above made to Kidder, Peabody & Co. by Mr. Loring, no public statement has been made by him concerning his plans and intentions up to this writing. In Boston financial circles it is stated that his examination of the textile situation thus far has led him to believe that the source of the trouble is over-equipment and over-production in advance of demand. To meet the situation it is stated that he believes that effective consolidations starting with mergers of selling or distributing agencies that have earning power and efficiency and taking in such mills or finishing plants as may be made efficient at moderate capital investments can maintain their position in the markets and force competition that will eliminate the unfit.

In Fall River it is stated that some manufacturers are convinced that they will be able to hold their own for some time by the addition of combers and of machinery that will enable them to reduce costs. They are watching the moves of Mr. Loring with a great deal of interest and are beginning to talk more freely of liquidation. In the past month plants that have been running very light and have been making limited earnings are being considered as possibilities for merging while others are being allowed to lie idle to await some action on the part of either creditors or stockholders.

Reports were published to the effect that the Algoquin Printing Co. and the Fall River Bleachery were to be combined with the Loring merger. These reports have been denied and both plants are in operation. It was also stated that two mills in New Bedford in which associates in the Kidder, Peabody organization have stock holdings were to be included but these reports were also denied. There are many vague rumors abroad, a recent one being that the Riverside and Dan River Mills of Danville, Virginia, were to become a part of a Loring merger and this was also denied. An appraisal and engineering examination of these plants was the occasion of the circulation of this report.

* HOMER LORING, the active promoter of the merger discussed in this article, retired last March from the Presidency of the Boston & Maine R. R,, after completing four years of work in rehabilitating that railroad. He had previously assisted in the rehabilitation of the Eastern Massachusetts Railway, a combination of street railways in Boston and the eastern and southeastern part of the state of Massachusetts. He had also served as head of the State Commission of Administration and Finance.

Since the consolidation of the converting interests in New York in the Loring merger became known, attempts have been made by many parties to bring about other mergers of mercantile houses for the purpose of following the plans outlined in the case of the United Merchants and Manufacturers, Inc. It was announced a short time ago that Fred Butterfield & Co. and the Bear Mill Manufacturing Co. had been united, each organization retaining its personnel but acting under a united Board of Directors made up of the two organizations and headed by Mr. Pinnell of Butterfield's as president and Charles L. Bernheiner of the Bear Mill Co. as Chairman of the Board.

There are many varied opinions in the markets concerning the final success of consolidation in solving the troubles of the cotton industry as there are men engaged in it. It is known that many converting organizations that have been approached to join the Loring merger and others have declined to abandon their individuality. On the other hand it is known that some of the commission houses and other selling agencies are on the verge of consolidation in one form or another.

Manufacturers are keen to keep in touch with the trials of new methods that will give them some promise of securing a steady outlet for their merchandise at a profit. But few of them are willing to surrender any part of their control of sales to accept an ephemeral connection with a sales organization that will not consider them as a mer-

cantile factor in the business. On the other hand there are many merchants including some of the sharpest and most successful converters in the cotton goods business who decline to abandon their own business and to assume the direction or responsibility of manufacturing. They prefer to sell in a market of their own finding and buy in a market that offers free competition.

It appears to be generally agreed this it will be possible for Mr. Loring and his associates to form a strong and profitable organization following the lines already outlined provided he does not rely upon owning and controlling more than 60 per cent of the sources of production. In the last analysis it is felt that if the Fall River mills cannot be operated at competitively low cost with mills elsewhere because of the onerous burden of high taxation, legislative restriction, and union labor a well managed mercantile organization can turn to the South for its merchandise supply and make a profit that will pay dividends on the capital being floated up to the present.

Lawrence Marx, Vice-President

While there are many complaints from manufacturers and others concerning the difficulties of maintaining a profitable distribution of the cotton goods output of the country merchants here feel that no form of organization will help much until over-production and over-equipment are controlled. Criticism of brokerages, commission agencies, direct selling agencies, and other forms of sales distribution are constant. Nevertheless at the present time all of these forms are showing profits for some and losses for others. In the commission house field a single organization representing 60 corporations in North and South Carolina is conceded to be doing a profitable business for its mills.

On the other hand the most profitable printing organization in the country employs a selling agency of five men working direct from the printing plant. Some mills that have always sold their product through regular brokers have made as large profits over a long series of years as mills of equal power in production have made through selling agencies of their own. Sight seems to have been lost of the fact that one of the causes of the uneasiness felt by manufacturers is the lack of recognition of the radical change that has been forced upon selling agents to maintain distribution through new agencies made necessary by the growth of the cutting industry, the chain store system, the catalog house system, and other new means of distributing to consumers.

Textile Pot-Pourri

The German textile industry has been picking up, say two United States Department of Commerce agents in recent reports. Although employment in the industry in mid-summer was below that at the end of 1927, the average of wages was higher.

:: :: ::

The British branch of the industry, particularly the section that is devoted to the spinning of American cotton, continues in the doldrums but shows some signs of improvement. Exports to China increased considerably during the first nine months of this year.

:: :: ::

The Department of Agriculture finds that 770,000 acres of land in the Southwest—in Western Texas, New Mexico, Arizona and California—was planted to cotton this year, an increase of nearly fifty per cent. Cotton growing is far from being, as of old, an American industry peculiar to the old South.

:: :: ::

The Madras Presidency, one of the wealthiest of India's cotton-growing areas, is now crossed by a railroad which expedites and shortens the movement of freight within and from the district, hitherto without rail facilities.

:: :: ::

Cotton & Finance, published at Bombay, notes that movement of cotton yarns from India to China is but a fragment of its formerly large volume. Indian yarn has been supplanted by the product of Chinese mills, which now consume 12 per cent of India's cotton. But "China's total purchases of cotton from all over the world are thrice as great as those from India."

:: :: ::

Research Fellows for N. C. State.

Arthur H. Thomas, Fort Hill, S. C., and J. J. Brown, Weston, Texas, have accepted positions as research fellows in the North Carolina State College Textile School, Raleigh, N. C. Mr. Thomas graduated from the textile school in 1926 and spent some time in the dye laboratory of the Riverside and Dan River Cotton Mills, Danville, Va., before going to the Fort Mill Manufacturing Company, Fort Mill, S. C., as foreman. Mr. Brown is a graduate of the textile Department of the Texas A. & M. College and has had experience in Texas mills. He will devote his time to carding and spinning problems.

New Equipment for Clemson College.

The spinning division of the Clemson College, Clemson, S. C., has secured from the Casablancas Corporation, 66 Leonard Street, New York City, a new spinning frame equipped with the long draft attachment manufactured by this company. The Casablancas equipment is on a 48-spindle Fales & Jenks spinning frame of the latest model. The frame is driven by a Allis-Chalmers motor through a Tex-Rope drive. The S. K. F. Industries of New York City is also cooperating with the Textile Department and is equipping one of the spinning frames with 80 roller bearing spindles.

Removing Crayon *from* Yarn *and* Roving

The Chalk Used for Identifying Hanks and Numbers Can Result in Trouble; This Article Tells What Can Be Used Without Harm

By Albert H. Grimshaw
Associate Professor of Dyeing, N. C. State Textile School.

YARN MILLS and weaving mills which make many different sizes of yarns and rovings, or use different types of cotton, in making their yarns, have various ways of *marking* the yarns to distinguish each lot.

One method which is commonly used is to mark the roving on the bobbin with a colored chalk or crayon. It may so happen that only one or two bobbins in the lot are so marked, but this light marking is sufficient to attract the eye of the operator.

A few months ago, the superintendent of a large yarn mill in North Carolina brought to the Textile School of North Carolina State College several samples of yarn and hosiery that contained very small colored spots. The cause of these spots was traced and conclusions formed that they came from the chalk used in marking the roving. Several methods of scouring were used on the samples, but the spots were hard to remove.

This superintendent then sent along to the school samples of the chalk which he was using, and experiments were made for comparative ease of removal after applying them to the cotton yarn. There were two samples which gave a pink mark; one of these was easily removed by using warm water, but the other—which was the one used on the yarn and hosiery mentioned—was much harder to remove.

THE SUBJECT of this article may seem at first thought somewhat inconsequential, but within the past few years a number of mills which have run on standards—that is, two or three numbers of roving and yarn—have been forced to make a greater number of yarns and roving. The comment of a prominent superintendent who read this article in manuscript is enlightening. He said:

> **"The simplest method we have found is to mark the different numbers and hanks with colored crayons, though we have had some very sad experiences in the use of a dark color of crayon, such as black, brown, gray and dark red. This trouble shows up especially when our goods are finished without having been bleached, as these dark crayons would not come out of the cloth in the processes that the average finishing plant uses in the dyeing of a number of the lighter colors.**
>
> **"This article may save some poor devil the experience that I was forced to go through!"**

Mr. Grimshaw's findings, therefore, are of importance, and he has given the results of his tests in an interesting manner.

A few weeks later, another mill sent in some cototh yarn which had some small black spots on it. It was thought at first that chalk or crayon was to blame for this trouble, but tests proved it to be carbon. When this trouble was traced back to its source, it was found to occur only on the yarn made on the night shift, whereas no spots occurred on the yarn made in the day time. As it was warm weather, all the windows were opened during the night shift, but it so happened that on the railroad beside the mill, an enormous amount of freight was being shifted during the night. The smoke from the shifting engines, which burn soft coal, was finally blamed as the source of the carbon spots, which were not due to marking chalk.

However, as these two complaints came so close together, it was decided to run some tests at the school on the comparative ease or difficulty of removing the chalk.

Three of the largest firms making chalk and crayons for marking yarn kindly supplied the samples of their products for our use. These products will be called *X*, *Y* and Z, in this article.

Of course, it is known that only a very small amount of chalk can occur at any single point in the finished yarn, but in order to get comparative results, the yarn was rubbed with an excessive quantity of the chalk or crayon. In scouring the yarn, the following methods were used:

Lot No. 1—Boiled with hot water, rinsed and dried.
Lot No. 2—Boiled with 1/1000 soap solution, rinsed and dried.
Lot No. 3—Boiled with 1/1000 solution of caustic soda, rinsed and dried.

These of course are not exact conditions such as would be met in actual scouring, but they serve for the purpose of obtaining comparative results of ease of removal.

After all of the skeins were dried, they were inspected and divided into lots containing what we considered to be "good," "medium," and "poor" results. By "good" we mean that the skeins showed no or very little signs of the chalk; by "medium", that the skeins showed some signs, but not enough to do any harm; by "poor", we meant the skeins were badly stained. In results marked "good" or "medium" in these severe tests, there is no reason to fear that any chalk or crayon stain would be left after a regular scour such as is given in actual mill work.

The skeins which were placed in the "poor" division, were then given a second scour with a strong solution of soap and caustic soda, rinsed and dried.

In Chart 1, Chart 2 and Chart 3, we give the divisions into which the skeins were divided. Two students and two teachers did this dividing at different times in order to insure a fair classification. In the Charts, "G" means good; "M" means medium; and "P" means poor.

The results after the Hot Water Scour are given in Chart 1. The results after the Dilute Soap Solution Scour are given in Chart 2. And the results after the Dilute Caustic Scour are given in Chart 3.

Then, as stated, we gave a second and strong scour to the skeins which showed up "Poor" in the first tests, and the results of this test are shown in Chart 4. These skeins were those which showed up "Poor" in the previous tests.

It is evident from a study of these charts that there are many colors which can be used with perfect safety—those which gave results "Good" and "Medium". For in no instance would there be such an extreme quantity of chalk used on the roving as we used on the skeins in the tests.

If the chalks or crayons marked "Poor" should be used care should be taken not to use an excessive amount. It is noticeable that black, brown and grey and others such as tan, probably containing black, give more difficulty in removal than many other colors, and so should be used with caution.

Tests on Oil-Sprayed Cotton.

As several of the mills interested in these tests were using oil-sprayed cotton, the School also ran a few parallel tests on yarn made from oil-sprayed stock. The yarn was supplied by the same firm that supplied the unoiled cotton yarn used in the previous test. The oil-sprayed yarn was 80s single, and the method of applying the oil is shown in the accompanying illustration. The emulsifiable mineral oil in an amount equal to three-tenths of one per cent of the weight of the cotton was sprayed into the conveyor pipe in the form of a vapor.

The results of these tests on oil-sprayed cotton are given in Chart 5 and 6. Chart 5 shows the results with a dilute soap solution, and Chart 6 shows the results with dilute caustic solution. As is apparent in the charts, the spraying of emulsifiable mineral oil does not interfere with the scouring operations or give added difficulties.

The latest method of spraying Breton Mineral by application of the oil in the conveyor pipe

CHART NUMBER ONE

Results of Hot Water Scour on Unoiled Skeins of Cotton Marked With Chalk.

Firm "X"		Firm "Y"		Firm "Z"	
Red	G	Blue	G	Blue	G
Violet	G	Purple	G	Purple	G
Pink	G	Light Violet	G	Pink	G
Orange	G	White	M	Deep Pink	G
Carmine Red	G	Dark Grey	M	Light Blue	P
Purple	G	Brown	M	Dark Blue	P
Indigo Blue	G	Light Blue	P	Black	P
White	G	Dark Blue	P	Salmon	P
Solid Lake Red	G	Black	P	Light Brown	P
Golden Yellow	M	Salmon	P	Orange	P
Sepia	M	Tan Brown	P	Sea Green	P
Olive Green	M	Light Brown	P	Light Green	P
Sky Blue	M	Orange	P	Light Yellow	P
Light Green	M	Pink	P	Grey	P
Terra Cotta	P	Buff Yellow	P	Dark Yellow	P
Green	P	Dark Green	P	Brown	P
Brown	P	Sea Green	P	Light Pink	P
Solid Blue	P	Light Green	P		
Burnt Ochre	P	Sage Green	P		
Best Yellow Ochre	P	Dark Green	P		
Light Yellow	P	Grey	P		
Grey	P	Dark Yellow	P		

CHART NUMBER TWO

Results of Dilute Soap Solution Scour on Unoiled Cotton Marked With Chalk.

Firm "X"		Firm "Y"		Firm "Z"	
Terra Cotta	G	White	G	Blue 1R	G
Green	G	Blue 1R	G	Light Blue	G
Black	G	Light Blue	G	Purple	G
Golden Yellow	G	Purple	G	Dark Blue	G
Red	G	Dark Blue	G	Pink	G
Brown	G	Dark Grey	G	Light Green	G
Solid Blue	G	Orange	G	Deep Pink	G
Violet	G	Pink	G	Orange	M
Pink	G	Buff Yellow	G	Sea Green	M
Orange	G	Light Yellow	G	Black	P
Sepia	G	Dark Green	G	Salmon	P
Carmine Red	G	Sea Green	G	Light Brown	P
Burnt Ochre	G	Light Green	G	Light Yellow	P
Azure	G	Dark Green	G	Grey	P
Purple	G	Grey	G	Dark Yellow	P
Best Yellow Ochre	G	Light Grey	G	Brown 2B	P
Light Yellow	G	Dark Violet	G	Light Pink	P
Grey	G	Tan Brown	M		
Olive Green	G	Light Brown	M		
Indigo Blue	G	Sage Green	M		
Sky Blue	G	Light Yellow	M		
White	G	Dark Yellow	M		
Light Green	G	Black	P		
Solid Lake Red	G	Salmon	P		
		Brown	P		

NOTE: All of Firm "X" were good with soap scour, but Chart number 3 shows that caustic did not remove these marks as well as the soap.

CHART NUMBER THREE

Results of Unoiled Cotton Scoured With Dilute Caustic Solution.

Firm "X"		Firm "Y"		Firm "Z"	
Brown	G	White	G	Blue 1R	G
Violet	G	Blue 1R	G	Light Blue	G
Pink	G	Light Blue	G	Purple	G
Carmine Red	G	Purple	G	Pink	G
Purple	G	Dark Blue	G	Sea Green	G
Grey	G	Buff Yellow	G	Deep Pink	G
Solid Lake Red	G	Light Violet	G	Dark Blue	P
Orange	M	Dark Yellow	G	Black	P
Best Yellow Ochre	M	Light Grey	G	Salmon	P
Indigo Blue	M	Dark Green	M	Light Brown	P
Sky Blue	M	Dark Grey	P	Orange	P
Terra Cotta	P	Black	P	Light Green	P
Green	P	Salmon	P	Light Yellow	P
Black	P	Light Brown	P	Grey	P
Golden Yellow	P	Orange	P	Brown	P
Red	P	Pink	P	Light Pink	P
Solid Blue	P	Sea Green	P		
Sepia	P	Light Green	P		
Burnt Ochre	P	Sage Green	P		
Light Yellow	P	Dark Brown	P		
Olive Green	P	Grey	P		
White	P				
Light Green	P				

NOTE: Notice how differently some of the above are affected by soap.

CHART NUMBER FIVE

Results of Dilute Soap Scour on Oiled Cotton Marked With Chalk.

Firm "X"		Firm "Y"		Firm "Z"	
Terra Cotta	G	White	G	Blue 1R	G
Green	G	Blue 1R	G	Light Blue	G
Golden Yellow	G	Light Blue	G	Purple	G
Red	G	Purple	G	Pink	G
Brown	G	Dark Blue	G	Sea Green	G
Solid Blue	G	Light Violet	G	Deep Pink	G
Violet	G	Light Green	G	Dark Blue	P
Pink	G	Light Grey	G	Black	P
Orange	G	Dark Violet	G	Salmon	P
Carmine Red	G	Dark Grey	M	Light Brown	P
Burnt Ochre	G	Light Brown	M	Orange	P
Azure	G	Pink	M	Light Green	P
Purple	G	Sea Green	M	Light Yellow	P
Best Yellow Ochre	G	Sage Green	M	Grey	P
Light Yellow	G	Light Yellow	M	Dark Yellow	P
Grey	G	Grey	M	Brown 2B	P
Olive Green	G	Brown 2B	M	Light Pink	P
Indigo Blue	G	Black	P		
Sky Blue	G	Salmon	P		
White	G	Tan Brown	P		
Light Green	G	Orange	P		
Solid Lake Red	G	Buff Yellow	P		
Sepia	M	Dark Green	P		
Black	P	Dark Brown	P		

CHART NUMBER FOUR

Skeins Tabulated in Charts One; Two; and Three Which Were Marked Poor Were Given a Second Stronger Scour in Soap and Caustic.

Firm "X"		Firm "Y"		Firm "Z"	
Green	G	Light Blue	G	Light Blue	G
Golden Yellow	G	Dark Blue	G	Dark Blue	G
Solid Blue	G	Dark Grey	G	Salmon	G
Grey	G	Orange	G	Orange	G
Olive Green	G	Pink	G	Sea Green	G
Indigo Blue	G	Buff Yellow	G	Light Yellow	G
White	G	Dark Green	G	Light Green	G
Light Green	G	Sea Green	G	Dark Yellow	G
Solid Lake Red	G	Light Green	G	Grey	M
Black	M	Light Brown	M	Light Pink	M
Red	M	Sage Green	M	Black	P
Brown	M	Grey	M	Light Brown	P
Best Yellow Ochre	M	Dark Yellow	M	Brown 2B	M
Light Yellow	M	Brown 2B	M	Black	P
Burnt Ochre	M	Black	P	Salmon	P
		Salmon	P	Tan Brown	P
		Tan Brown	P	Dark Brown	P
		Dark Brown	P		

CHART NUMBER SIX.

Results of Dilute Caustic Scour on Oiled Cotton Marked With Chalk.

Firm "X"		Firm "Z"		Firm "X"	
Green	G	Solid Blue	M	Blue 1R	G
Golden Yellow	G	Terra Cotta	P	Purple	G
Red	G	Black	P	Dark Blue	G
Violet	G	Brown	P	Orange	G
Orange	G	Sepia	P	Pink	G
Carmine Red	G	Burnt Ochre	P	Sea Green	G
Azure	G	Best Yellow Ochre	P	Light Green	G
Purple	G	Light Yellow	P	Light Yellow	G
Light Yellow	G	Olive Green	P	Deep Pink	G
Olive Green	G	Solid Lake Red	P	Black	P
Sky Blue	G			Salmon	P
White	G			Grey	P
Light Green	G			Dark Yellow	P
				Brown 2B	P
				Light Brown	P
				Light Pink	P

Using Direct Colors in Package Machines

The Third of a Series on "Package Dyeing" in Circulating Machines; Showing That Direct Colors Are Being Used in This Method

By Harold Schroeder

AT ONE TIME it was considered that the circulating machine was not suited for the dyeing of cotton on the beam or package with direct colors. The early difficulties were due to some extent to the then faulty machine design, a lack of appreciation of the importance of correct winding, the choice of unsuitable colors and the absence of laboratory control as a source of correct formulae methods.

Today a circulating machine can produce direct dyeings equal in levelness to any other method of dyeing and in some respects superior to some other methods. This has been accomplished, apart from the improvement in the machines and in the winding, by an increased understanding of the individual natures and strong "personalities" of the various dyestuffs available.

Every dye used in a metal circulating machine is to some extent changed in shade by the metal. Analysis of the yarn after dyeing will usually show a minute iron content and the effect of the metal on the shade produced has always to be reckoned with in this type of dyeing.

The dyeings in a closed machine are rarely as bright as those produced by dip methods, the "bloom of the peach" has, so to speak, been rubbed off, but in these days of mode shades which are designed to absorb light instead of throwing it back to dazzle the observer, this inevitable dulling effect in the closed machine is not so important.

If the closed machine dulls the shade by reason of the metallic action there is certainly a compensating advantage in the increased fastness obtained. The action of the forced circulation fills every last fiber with dyestuff, pumps it through and through and, to top off, gives it a metallic after-treatment in the shape of a dose of iron salt. In this type of dyeing the yarn and the fiber are always in contact so that the temperature can really act on the dye and the cotton. The increased fastness obtained is so noticeable as to become embarrassing when it is necessary to wash off a "too-heavy" shade. A dip dyeing can usually be pulled down considerably in depth by just rinsing in warm water. The dyeing made in the circulating machine will be found to require a sterner treatment and higher degrees of temperature before the dye and the yarn are willing to part company.

Every dyer of experience is only too well aware that dyestuffs have considerable human characteristics; each one has its distinct individuality and nature and personality. Just as human beings get on the better by being treated in the manner for which they are best suited so the most successful dyeings come from fitting the method to the dyestuff rather than by trying to force the dye to fit the method.

Every defect which may be present in the repertoire of a dyestuff—and what dyestuff is there that can be classed as perfect—becomes accentuated in machine dyeing. A dye that was just a little bit troublesome in dip dyeing is apt to become a very thorn in the flesh when applied to the circulating machine and the dye that was just suited to dip dyeing may be just the reverse when used on the package or beam. Accordingly dyes for machine dyeing have to be reclassified and looked at from other points of view.

PACKAGE DYEING with direct colors, with the assistance of better machine design and a better understanding of winding, together with an adequate laboratory control and the proper colors, has increased within recent years. In this third article of his series, Mr. Schroeder discusses many angles involved in the handling of this class of colors in package machine work. He likewise touches upon other related subjects that will be of interest to the experienced package dyer as well as the man considering this type of work in his plant.

Continuing this thought, the next article in the series, to appear in an early issue, will cover the use of the sulphur colors in this class of dyeing, and later installments will go into detail regarding other phases of this method of applying color to yarns.—The Editor.

The first test which a dye has to undergo is that of metal effect, usually tested by boiling a dyeing in an iron vessel, such as a glue pot, for a couple of hours and noticing the change in shade as compared to a dyeing of similar strength made in glass. Whatever change is caused in such a test may be taken as a measure of what will take place in the actual dyeing process.

Having in that way separated the chaff from the wheat and obtained a large assortment of metal-proof dyes the next step is to grade them for exhausting properties.

In some other methods of dyeing the faster a dye will exhaust, and the lower the temperature, the broader the smile on the face of the dyer.

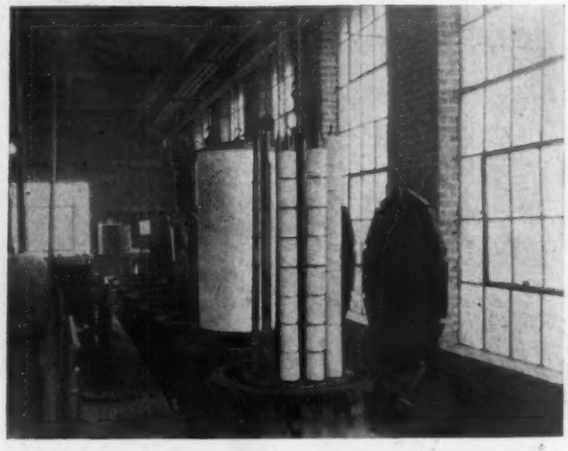
Machine dyeing needs a dye of definite properties and there is one good test for determining which are the most suitable colors. A skein of mercerized yarn is wet out in the usual way and then immersed in a bath containing one ounce of dye per 100 pounds of yarn. The temperature is then slowly raised to the boil. The most suitable dyes for machine dyeing are those that do not exhaust at the boil until salt is added though there are some exceptions. It will be noticeable that most of the dyes that pass this test are also of good light fastness.

Dyes may in general be classed into four divisions. First, those which begin to exhaust in the cold and which exhaust faster the higher the temperature; these may be termed Class 1. Then there are the dyes which do not appreciably exhaust below 120-140 degrees, F., but which, from then on, exhaust rapidly at higher temperatures; we may call these Class 2. The third is a group of dyes which start to exhaust at around 140-160 degrees F., but which show less affinity at the boil than they do at lower temperatures—these form Class 3. The last and most suitable of all is that group of dyes which do not exhaust at any temperature until the salt is put in—they constitute Class 4.

Dyes in Class 1 which exhaust enthusiastically below

120 degrees F., are very likely to cause trouble in the way of streaks and ringed packages and should not be used except for heavy shades. Very possibly the reason for this is that the circulating machine needs a definite time and temperature to get the dye all mixed through the machine, to obtain penetration of the package or beam before the dye starts to exhaust. It seems almost certain that unless the penetration is obtained at the start that it is not likely to be fully obtained later on. Accordingly dyestuffs which have a delayed affinity, which lack "impetuosity", will be found to give the best results for light shades since they allow the machine to have for its own necessary purposes the temperature band from cold to 120 degrees F.

Dyeings in the machine seem to thrive best when the operation is carried on in certain well-defined stages. After loading the machine and putting on the cover it is filled up with water and tested to see if the circulation is satisfactory. If this proves to be all right the water level is lowered to a point to make room for the condensation which will later occur in the bringing up of the temperature. A suitable quantity of a neutral well-sulphonated oil is adde, the machine allowed to run for a few minutes and the direct dye is added.



Craig-Hornbuckle package dyeing machines, showing beam and Sonoco tubes ready for dyeing. Two of the carriers in the foreground are equipped with gaskets to keep the packages in proper alignment and break joints between the packages to prevent the leakage of dye. Note difference between alignment of these tubes and those on carrier on right on which no gaskets are used.

It is necessary to have the dye in as perfect a solution as can be obtained. It will be found necessary to use more water per pound of dye and to boil longer in the drug room than in other methods. Any addition of chemical, apart from an alkali, that will make the dye more soluble, is to be recommended.

Steam may now be turned on slowly to bring the temperature slowly from the cold to 120 degrees F., and this is really the most important part of the whole dyeing operation.

This band of temperature is used by the machine in wetting out the yarn, in mixing the dye all through the bath, in penetrating the yarn and in general making everything homogenuous and uniform. It makes no difference whether the yarn is previously boiled out or not; in fact, better dyeings are obtained with yarn that is not boiled out previous to dyeing. The one requirement is to avoid dyes that are part of Class 1 because then the dyeing would be going on at the same time as the wetting out. When using dyes of Class 4 there is no danger of the dye going on until the yarn is completely wet out and the difference in price between the two classes of dyes is not enough to matter.

Once past this critical stage, the steam may be turned on more so as to increase the speed of heating, indeed when dyeing heavy shades or when using Class 4 dyes there is no danger in bringing the bath to the boil in half an hour or less. Quite satisfactory dyeings can be obtained at lower temperatures but in those cases the dyer is more at the mercy of variations in winding quality. Once at the final dyeing temperature, the machine is allowed to run for ten minutes and then the salt is very slowly added over a period of ten minutes or more.

Those dyers who use the dip methods of dyeing do not so readily appreciate that in circulating machine dyeing, Glauber's Salt is better than common salt. Common salt is necessary in dip dyeing on account of the dilution of the bath, also the dyes do not have to be in such perfect solution as in the closed machine. In machine dyeing the bath is so much more concentrated than in other methods that the harsh driving action of common salt is too sudden and energetic and the use of common salt from week to week will produce more trouble than its lower price justifies.

Glauber's salt is a by-product of several manufacturing processes and some of the salt on the market is so impure as to be quite unsuitable for machine dyeing. A good test and one which few grades of salt will meet is to dissolve some of the salt in water and make the solution alkaline with soda ash. Any precipitate will indicate that that particular salt is liable some time to cause deposits on the packages.

It will be found that much less salt is required than in other methods of dyeing. When it used to be necessary to use 20-40 per cent of salt there is frequently no need to use more than ten per cent and sometimes for quite full shades an addition of one or two per cent will be found to make a satisfactory exhaustion.

The dyeings are supposed to run to exhaustion and usually after the salt has been in the bath for 15 minutes a sample may be taken with the confidence that further running of the machine will not change the shade to any material extent.

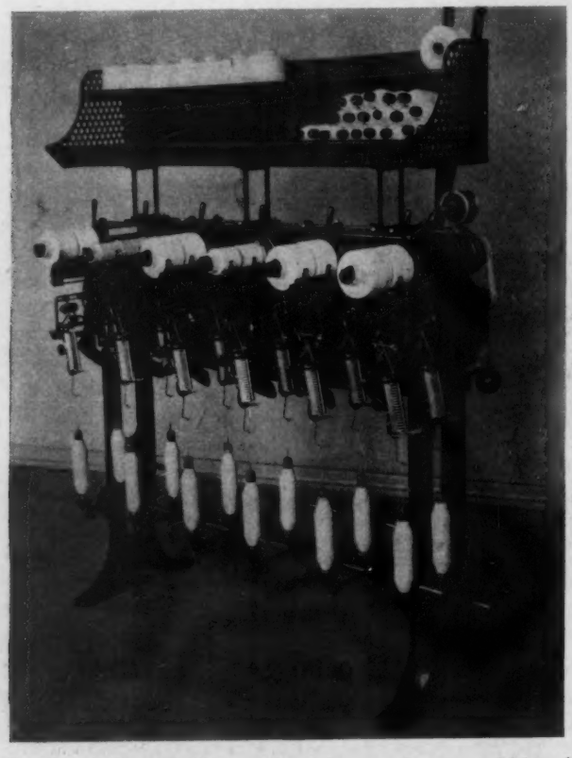
For shading the dyeings it is advisable to use dyes which are members of Class 4, which do not exhaust until salt is added, though there are some exceptions, usually light fast colors are the best. The dye to be added to change the shade should be well boiled up and slowly added to the machine, using a drip bucket. A sample can usually be taken in 15 minutes after adding the shading dye.

After the yarn is brought to shade the bath is dropped and is then given a wash in a salt solution. The first wash is usually unavoidably high in temperature because the metal of the machine holds enough heat to warm the wash water up considerably. The addition of the salt helps to keep the shade where the dyer left it.

The next step in finishing the yarn depends on what the dyed yarn is to be used for. If it is going into the weaving trade, where a yarn of special softness is of no benefit, the yarn may be finished in a salt bath to help set the

"Yarn for hosiery work needs to be softened or lubricated. There are two schools of thought; one uses a vegetable or animal oil or some combination of the two, the other puts its faith in mineral oil. When it is borne in mind that most rayon is finished with a mineral oil, there is some evidence to support the belief that mineral oil is preferable. Its use does not interfere with subsequent re-dyeing."

color and taken out for extraction and drying. Yarn for hosiery work needs to be softened or lubricated. There are two schools of thought: one uses a vegetable or animal oil or some combination of the two, the other puts its faith in mineral oil. When it is borne in mind that most rayon is



Showing a No. 50 Universal winder winding two 2¾-inch traverse dyeing packages per spindle from spinning bobbins for dyeing in a package machine.

finished with a mineral oil, there is some evidence to support the belief that mineral oil is preferable. Its use does not interfere with subsequent re-dyeing.

Developed colors may be readily handled in the closed machine and the processes used are no different from those in use in dip methods. It will be found necessary to be a little more careful in the subsequent soaping to remove the last of the excess dyestuff so as to obtain the maximum fastness.

(This is the third of a series of articles on Package-Dyeing by Mr. Schroeder. The next, to discuss the dyeing of sulphur colors, will appear in an early issue.—The Editor.)

Celanese Corporation Announces Two New Yarns.

The Celanese Corporation of America, 15 East 26th Street, New York, have begun the production of two super-extra yarns as fine as natural silk, it is announced. These yarns are a 75 denier yarn of forty filaments and a 150 denier yarn of 80 filaments. The company states that these yarns can be procured in all degrees of luster, from dull to the highest.

Refreshment Trucks in the Mill

MANY mills are operating, or are considering the installation of refreshment or food and drink carts for service to mill operatives during working hours. In this connection, the following comments upon the practice will be of interest. They are made by a prominent southern mill head, who says:

"We have operated refreshment trucks in the mill here for years. We do it because we think it is the proper thing to do. We do not want to do it, and have tried to stop it several times. We find, however, that it is a great benefit to the help, especially in the mornings. We find it quite a benefit to hands who do not live in our village.

"I do not see how anybody can say what results we get from increased efficiency. We do stop quite a number of operatives getting passes and going out of the mill to get something to eat, when they are hungry, and in a great many cases to get something to drink when they do not need it, but think they do. It does a great deal of good in

A New Truck Developed by The Wright Co., Atlanta, Ga., for use in the mill. The distribution of milk in this manner is a great benefit.

furnishing milk to the hands. We have tried to develop this side of it, to build them up. We furnish them with quite a lot of milk and cinnamon buns, chewing tobacco and snuff, which is quite a help, because when they feel they want these things, they will go out and get them.

"When you do not operate these trucks you have people going out all the time, and you cannot stop it. The biggest object in a truck like this, and what you ought to look for mainly is, building up the under-nourished people. We have done a lot of good this way, taking people off of soft drink preparations and putting them on milk.

"In regard to the investment, you should make money out of it, although this is not the object. It should not be operated at a loss, and people should be charged for the articles the same as they would be in a store.

"We have a small refreshment room in the mill, where we keep our supplies, and where the help can come at the noon hour. The trucks work out of this room, throughout the mill, all day. We only have two trucks for this plant (over 100,000 spindles) and we have girls in uniform taking them around.

"I think it is a perfectly proper thing to do, and it is best for the mill to do it."

Individual Motor Drive Applications on Cards and Roving Frames

By H. W. Reding

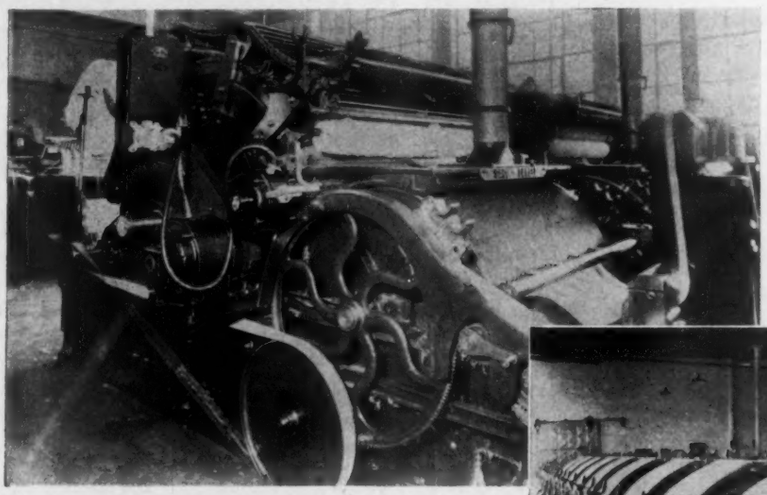
AT THE MEETING of the Textile Section of the American Institute of Electrical Engineers Regional Division in Atlanta on October 31st, Mr. Reding, who is textile engineer for Westinghouse Electric & Manufacturing Company, presented an instructive paper discussing the application of motor drive to cards and roving frames.

Since this application is comparatively new, and believing that many of our readers will be interested in how the application is made, we present the accompanying abstract of Mr. Reding's discussion, which points out the method used in applying individual drive to these machines and gives his observations on the value of this type of drive in these cases.

The Editor.

IN COTTON MILLS, the first applications of individual drive were made to spinning and twisting frames and to looms. Methods of applying individual drive to these classes of machinery have been studied and extended and there are available various approved methods of application to meet the conditions to be found. But it is only within the past few years that particular attention has been paid to the development of individual drives for cards and roving frames.

Polyphase alternating current motors rated at 1 1-4 to 2- hp., and 1160 r. p. m., have been generally adopted, for card drive application the motors being mounted on brackets attached to the cards with gear or chain drive to the main shafts. The motor is designed to have a starting torque of about 250 per cent of full load torque, which is more than is necessary to overcome the static friction. Without this fairly high torque, the period of acceleration would be unduly long owing to the inertia of the cylinders. As customarily installed, the starting period is from 18 to 22 seconds, which has proved to be entirely satisfactory.



Individual motor card drive, showing motor, switch and portable stripper motor.

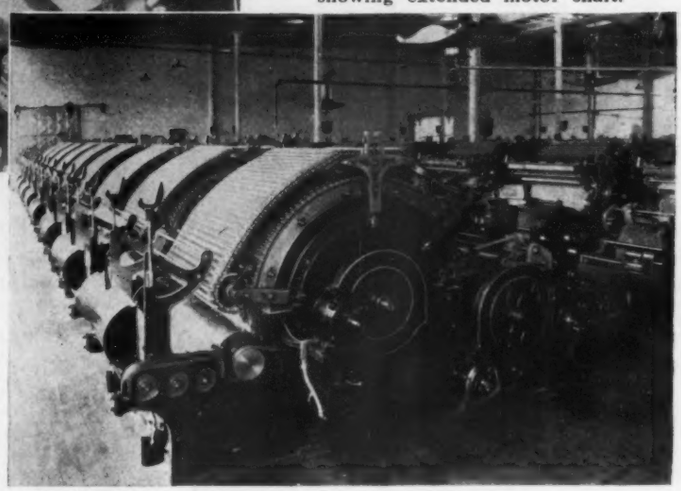
The application of individual drive to a card must, naturally, be capable of properly meeting the requirements of reversing and stripping. The control switch provides means for reversing the friction rotation. Provisions for stripping vary with the system being used. For systems which require a rotating stripping brush two methods may be employed. A small portable motor is sometimes provided which may be quickly engaged with the end of the brush shaft. At other times a short shaft extension is provided on the front end of the motor onto which a small portable rope sheave may be slipped, driving to another sheave on the brush by means of a rope.

Motor drives for roving frames fall into two general classes of group and individual drive. As to group drives, there is the usual form of large group drive and the four frame drive in which frames are belt driven directly from pulleys on the motor shaft. Low speed motors are used.

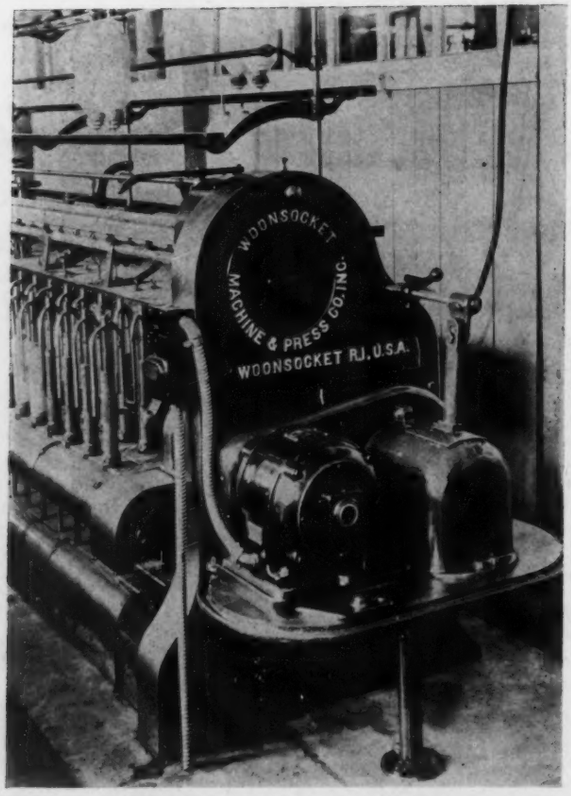
Roving Frame Application Requirements.

As to individual drives, one system employs a motor which runs continuously. The frame is started and stopped by operating a clutch between the motor and the frame shaft. The other system makes use of a motor driving directly to the machine. In this case the motor must start and stop with the frame. For this application it is customary to employ a motor of low starting torque. In the ideal condition this torque would be just sufficient to break the static friction of the machine under the most adverse condition to be encountered. In the practice the motor starting torque is from 12 to 18 lb. ft.

In an old mill changed from engine to motor drive, there are many considerations which do not enter when planning



Another individual card drive installation showing extended motor shaft.



Individual roving frame drive, using a continuously running motor with clutch.

drives for a new mill, or for machinery to be added to an old mill. The following discussion of factors affecting the selection of drive applies particularly to the equipment of new mills, or the addition of machinery to old ones where provision for driving must also be added.

A card with gear or chain drive will run at a constant and predetermined speed within very narrow limits. Such variations as are found are caused by slight differences in load. The results of individual drive compared with group drive with respect to speed and production are well illustrated by speed studies which have been made. The speed of each card was taken in a number of mills, and the difference between the average and maximum speeds found in the same installation taken as the measure of the loss of production. In the group drive installations was found an average loss of 7.3 r.p.m., or 4.33 per cent. Slight variations were also found in individual drive installations, and applying the same method of computing, the average loss was 1.1 r.p.m., or 0.59 per cent. The difference between these two percents, or 3.74 per cent, is a fair measure of the increased production which may be obtained with individual drive as compared with group drive.

Machines with individual motors may be installed without reference to a fixed shafting lay-out or in accordance with an arrangement which would make a difficult lay-out for shafting. Such machines may be operated at any time without reference to other machines and in case of failure of a motor or drive, only one machine is affected. The question of flexibility is often a deciding factor where machinery is to be added to an old mill. A card with individual drive will have an overall width approximately five inches more than the same card arranged for belt drive. In practice, the space occupied by an installation of cards with individual motors will be very nearly the same as that occupied by the same number of machines driven in a group. There may be smaller clearances between the end of a motor and the adjoining card since there is no exposed moving part in connection with the drive.

Individual Drive is Accessible.

The accessibility of the individual drive makes good care easy which might in some cases have a bearing on the life of the equipment. Large motors used with group drive are more efficient than small ones used with individual drive, but the drive used in the individual installation is more efficient than belts and shafting necessarily used with the large motors. The combined efficiency of large motor and transmission will be about 73 per cent. The combined efficiency of the small motor and chain will be about 79 per cent.

Drives for Roving Frames.

Production of roving machinery, in general, depends upon a proper application of power and constant and correct speed. A positive individual drive if properly applied will deliver a flow of power which will not cause the ends to break and which will hold a constant and predetermined speed. These conditions assure maximum production from each machine as far as is possible with respect to the drive. With group drive there is an average of three belts between the motor and the machine. The possibility of variable slip in each of these drives tends to reduce production.

Four-frame drive decreases the number of belts to one, and has a record of satisfactory service. There remains the possible slip in the one belt in addition to which there is the question of wear of the non-metallic pulleys used on the motors. These pulleys are comparatively small in diameter and, with wear on the surface, the speed is reduced.

As to flexibility in operation, from a practical standpoint, the four-frame and the individual systems of drive are about equal. The four-frame drive is not suitable unless there is good ceiling height. Failure of one motor stops four frames while with individual drive only one would be affected. The group drive system naturally lacks flexibility in operation.

In respect to cleanliness, the individual drive possesses distinct advantages over the other forms of drive. There is no possibility of oil drip and there is much less probability of flying bits of lint alighting on the work.

The difference between individual and four-frame drive will be slight with regard to efficiency and power factor. Group drive will be lower in efficiency.

Fixed charges on the additional investment in individual drive will range from $10 to $16 per year for one frame, and the value of the cotton handled in a year will be from $30,000 to $50,000. Even very small values placed upon the improvements in quality and production which are attributable to individual drive will very quickly offset the added cost of such a drive.

The experience of those who have used individual drives on cards or roving frames make it clear that the value of the qualities, peculiar to individual drive, may greatly exceed the small difference in first cost and lead to the conclusion that this form of drive will be increasingly used by those making quality cotton yarn and cloth.

Hedging and Style Feature Boston Meeting

Lincoln Baylies Elected President; Walker D. Hines Discusses the Institute; Feiker Speaks on Cooperative Activity; Technical Session Held

COTTON hedging and cotton style featured the annual convention of the National Association of Cotton Manufacturers, which was held in Boston, on October 24th and 25th, at the Copley-Plaza Hotel. Lincoln Baylies, a partner of Amory, Browne & Co., was elected president of the Association, succeeding Colonel G. Edward Buxton. Officers re-elected included Philip Dana, treasurer, Dana Warp Mills, Westbrook, Maine, senior vice-president; Russell T. Fisher, secretary; W. Irving Bullard, treasurer, E. H. Jacobs Mfg. Co., Danielson, Conn., as treasurer for the eleventh term. Irving Southworth, agent, Pacific Mills, was made junior vice-president.

LINCOLN BAYLIES, the new president of the National Association of Cotton Manufacturers, is a partner in the selling house of Amory, Browne & Co. He is 35 years old, and a graduate of Harvard. He has worked in the Amoskeag Mfg. Co., and Nashua Mfg. Co., later joining Amory, Browne, and becoming a partner in 1923. Mrs. Baylies was Miss Beatrice Ballard, of Louisville, Kentucky.

Walter D. Hines, president of the Cotton-Textile Institute was an impromptu speaker at one of the sessions, and stressed the significance of the style trend toward cotton goods. President Buxton also referred to "the unmistakable trend of cotton toward style significance" as being "the one development of the year which easily is of greater importance than every other consideration." He urged that manufacturers seize every opportunity to develop this trend further.

In speaking of the Institute, Mr. Hines took occasion to outline definitely some of the fundamental policies of the organization. Answering critical suggestions that the "big stick" be used in connection with his work, he pointed out that the Institute makes no substitute for freedom of action by its members; declaring that its functions rather is to place statistics and information before the mills, and to create a broader spirit of cooperative action in the industry.

Ernest C. Morse, head of the New Uses Section of the Institute, made an extensive address showing how the uses of cotton have been extended and amplified. He expressed the belief that 1929 will be even greater from the standpoint of new and extended uses for cotton, pointing out that for the past few years there has been a gradual increase in the number of cotton dresses sold at retail, as well as in the retail sales of cotton piece goods. Dr. Louise Stanley, chief of the Bureau of Home Economics, Department of Commerce, also discussed this subject.

The other general subject of wide interest to manufacturers which was discussed was that of "Hedging of Cotton". Ward Thoron, treasurer of the Merrimack Mfg. Co., Lowell, Mass., was one of the speakers, taking the obverse side of the issue as to the advantages of the practice. Samuel T. Hubbard, a former president of the New York Cotton Exchange, and Melvin T. Copeland, professor of economics at Harvard University, were among the speakers who argued for the benefit of hedging, it being pointed out that hedging should be helpful to the manufacturer, if practiced in the right manner, and that "hedging is the antithesis of speculation." Mr. Copeland pointed out that "in order for hedging to be effective for cotton merchants, it is essential that raw cotton spots and futures move together. Despite some difficulties arising from discounts on futures and from abnormal differentials between other grades and Middling cotton, and also despite temporary aberrations of the market, it is a fact that the prices of spot cotton and cotton futures do move closely enough together to give a cotton merchant a high degree of protection by hedging."

There was an interesting technical session at which warp sizing, mill calculations, dyeing fast colors, etc., were discussed. Among the speakers were Richard G. Knowland, consulting textile chemist, Boston; L. C. Himebaugh, director textile department, Pease Laboratories, Inc., New York; Edward R. Schwarz, Massachusetts Institute of Technology, Boston; and others.

Fred M. Feiker, managing director, Associated Business Papers, Inc., discussed the subject of cooperation, describing the organization of which he is the directing head, and which is composed of the leading business and trade journals of the country.

E. T. Pickard, chief, textile division, Bureau of Foreign & Domestic Commerce, Washington; Dr. B. Youngblood, chief, agricultural economist of the Division of Cotton Marketing, Bureau of Agricultural Economics, Department of Agriculture; Arthur W. Palmer, chief, Division of Cotton Marketing; Charles W. Schoffstall, chief, textile section, Bureau of Standards; and others were also speakers during the convention. Russell T. Fisher, secretary of the Association, reported for the year's work, indicating the increased attention being paid to the style element in cotton goods manufacturer.

The following were added to the board of government: Amory Coolidge, assistant treasurer, Pepperell Manufacturing Co., Biddeford, Maine; John H. Holt, treasurer, Luther Mfg. Co., Fall River, Mass.; Charles E. Inches, treasurer, Androscoggin Mills, Lewiston, Maine; Frank I. Neild, president, Neild Mfg. Co., New Bedford, Mass.; Henry G. Nichols, treasurer, Otis Co., Ware, Mass.; and Walter Whipple, agent, Nashua Mfg. Co., Nashua, N. H.

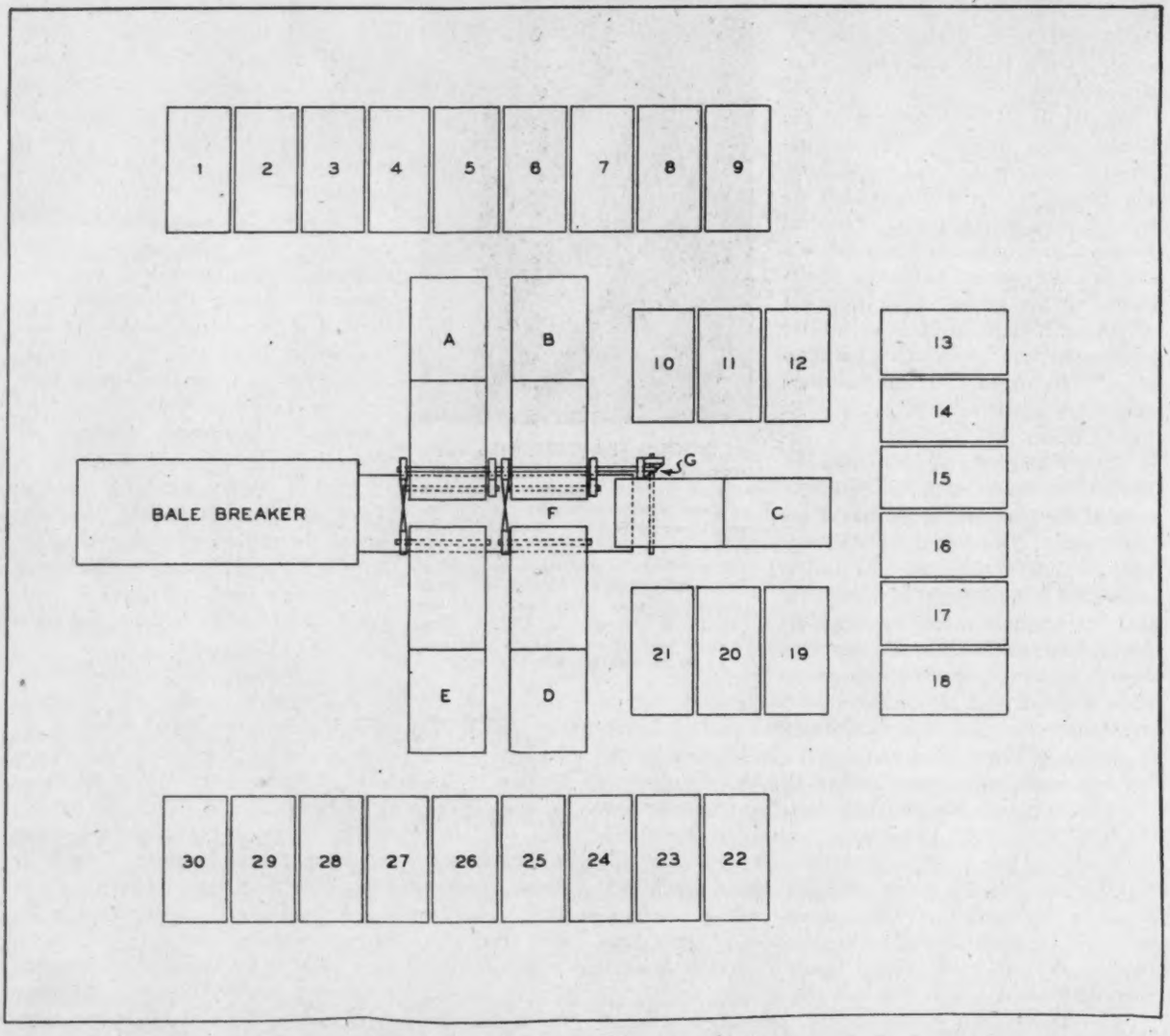
An Effective Blending and Mixing System

Describing a Carolina Installation Which Combines a Thorough Mixing with Blending for More Even Results

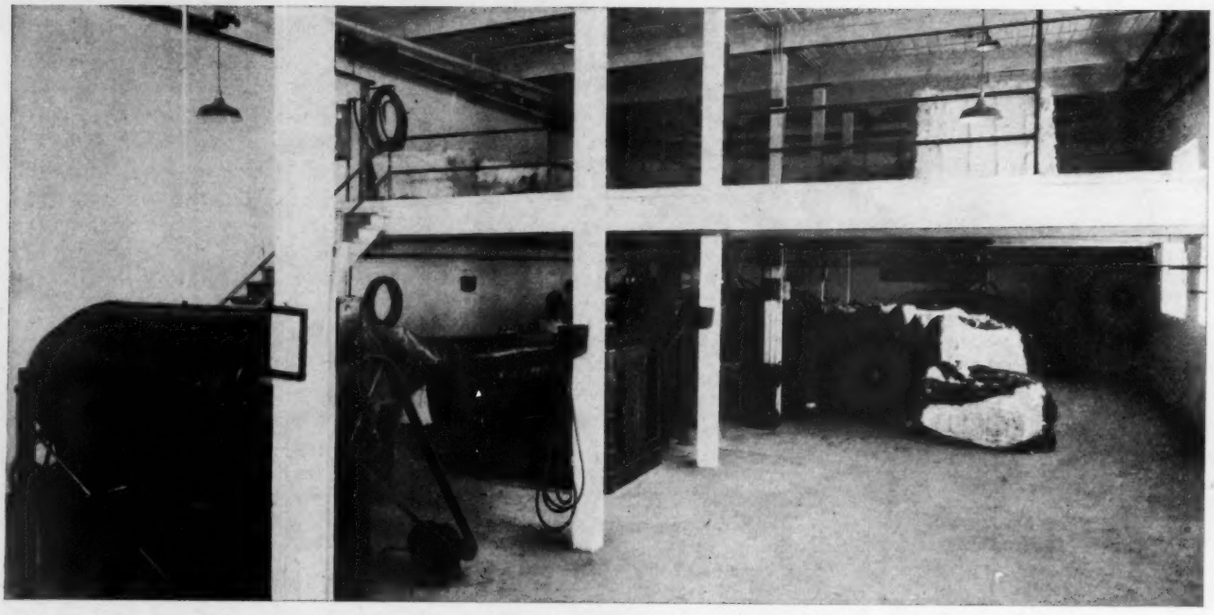
A RATHER novel and extremely effective method of mixing and blending cotton has been developed at a prominent South Carolina mill. In view of the interest in this subject, and the unique plan utilized by this mill, it is described here; the accompanying photograph and drawing showing a plan view being used to clarify the description.

It will be noted that there are five hopper feeders, *A, B, C, D,* and *E,* arranged so that they all deliver into the bale breaker. The mill opens thirty bales of cotton at a time, and the sketch shows how these thirty bales are arranged around the five hopper feeders, layers off of six bales being fed into each feeder. These feeders in turn drop portions of their six bales on the feed apron of the bale breaker, so that by the time the cotton reaches the hopper of the bale breaker, a thirty-bale mix is secured at all times.

This would be considered by many as a rather good mixing and blending process, but at this plant they have gone one step further. In the photograph it will be observed that there is a second floor level or "balcony" arrangement. Thirty additional bales of cotton are placed



The rectangles marked from 1 to 30 represent the thirty bales of cotton, and the way they are arranged around the five hopper feeders, marked A. B. C. D. and E. This is the first floor arrangement. On the upper level, thirty bales are arranged in the same way, being fed down through holes located immediately above the hoppers. All five hopper feeders are driven from shafting G, with open belts on A and B, crossed belts on E and D quarter turn on C. A Reeves variable speed drive controls the speed of the shaft G.



Showing the two-floor level idea; cotton on one level is ageing and expanding while that on the other level is being used. After being delivered into the bale breaker by the five hopper feeders, as explained in the article, the cotton goes through the vertical and horizontal cleaners shown in the foreground.

on the upper floor, in a way similar to the arrangement shown in the sketch for the first floor, except that in the place of the feeders, there are holes cut through the floor immediately over the hoppers, so that the opening room man can feed the feeders through these holes with cotton from the bales on the upper floor level. The cotton is raised to the upper level or platform by means of an electric hoist (not shown in the photograph), and trucked to the desired location.

Thus it will be seen that while the cotton on the first floor level is going into mill production, there are thirty bales opened on the upper level. This naturally gives the cotton on the upper level twenty-four hours in which to expand, an especial advantage in cases where compressed cotton is being used. By the same token, while the cotton on the upper level is being used, there are thirty bales opened on the first floor, allowing it to age and expand. In this way the mill is always twenty-four hours ahead of its daily requirements.

The advantages of this sort of an arrangement, in addition to the very important one of floor space conservation, will be apparent to the operating executive. The ultimate result and aim, of course, is better running work; that is, more uniform results day in and day out. This arrangement tends to prevent cotton of various style lengths coming through in too large quantities at one time. By doing this, it prevents waves of good running work with good staple coming through, and a "tear up" which inevitably results from too much short staple coming it at one time.

In years when there is a great amount of low-grade or tinged cotton on the market, the mill feels that when it is desirable to add a little of the low-grade stock to the regular white mix, in order to lower the price, that a perfect blending of the stock will permit this to be done with satisfaction. Without such an arrangement, however, it is evident that much difficulty would be experienced in preventing streaks in the yarn and cloth.

Booklet by the Compressed Air Society.

This pamphlet embodies the result of extended study and research on the part of the executives and engineers associated with the companies that are members of the Compressed Air Society. It embraces the accepted nomenclature and terminology relating to air compressors and their operation, with appropriate definitions; a history of the development of speeds of air compressors; an explanation of capacities and pressures; a description of the low pressure nozzle test recommended by the Society; instructions for the installation and care of air compressors, suitably illustrated, and recommendations for their lubrication; illustrations of the standard A. S. M. E. air receivers and a list of standard sizes of air receivers; pneumatic tool standards; numerous tables that will be of assistance in the treatment of various compressor problems; and a partial list of applications of compressed air.

The Compressed Air Society, New York, states that it is their belief that there is a need for such an authoritative work of reference and that compressed air engineers and users as well as manufacturers of air compressors will appreciate this effort for the establishment of definite trade standards in the industry. The cost of this booklet is fifty cents per copy.

Interesting Booklet Published by General Electric.

Silent Gears, is the name of a booklet published by the General Electric Co., Schenectady, N. Y. This booklet describes the manufacture of Textolite gear material and recommends the installations for which these gears are best suited. There are also instructions as to the best methods for machining and cutting these gears. The latter part of the book is devoted to descriptions of the various forms in which Textolite may be procured.

Diamond Chain Acquires New Product.

Diamond Chain and Manufacturing Co., Indianapolis, Ind., has completed arrangements with the I. H. Dexter Company, Goshen, N. Y., for the manufacture and marketing of the Clark flexible coupling. This coupling has been manufactured and marketed by the Dexter Company for the past fifteen years.

This Question of Night Mill Operation

Is It Economically Sound? Is It Necessary? What Do the Industry's Leaders Think? What are the Future Possibilities?

By Dunhill Marsden

A FEW DAYS AGO I met one of the largest cotton mill operators in Alabama and he said that the most fundamental problem facing the textile industry today is that of eliminating night running. A few days before that I had met one of the largest operators in Georgia who made the same statement; a little afterward I met one of the largest operators in South Carolina and he made the same statement; and today I met one of the most influential manufacturers in the State of North Carolina, and he made the same sort of comment upon conditions of today.

On the trains and in the hotels, and in the market place, this question "When will night work be eliminated?" is now continually being asked and eighty per cent of answers that are given are "night run must be eliminated;" these people who are talking are not theorists. They are not reformers, they are not socialists. They are good clear-headed, far-seeing business people, manufacturers of cotton textile products.

W. D. Anderson, of the Bibb Manufacturing Company, added impetus to the discussion of night operation of cotton mills, in his address Richmond last May.

Particularly since that time, unofficial discussion of the matter has continued with a rapid increase and extensiveness which so vital a subject naturally would produce.

Mr. Marsden, who prepared the accompanying article, is in an especially good position to secure and reflect the viewpoints of the cotton manufacturer; is himself deeply concerned with the industry's future.

There is comparatively little in the fundamental arguments he presents regarding night operation which would be new to either the protagonists or opponents of night running. However, in reaching his conclusions, the author does present a singularly novel viewpoint, one which should interest the reader, whether or not he finds himself in agreement with the general conclusions.

"The right of honest men to differ in opinion" is a fundamental of democracy. COTTON would welcome any constructive discussion from its readers looking to the possible definite solution of "the most fundamental problem facing the textile industry today."

A Wide Difference of Opinion.

There is, however, in comparison with this a small group of conscientious objectors, men who are as firmly fixed in their ideas that the night run should not be eliminated as those are who believe that it should be eliminated. They say that these are unusual times and that their mills are peculiarly situated and peculiarly adapted to the policy of night running, and, therefore, it is not right to try to force an idea on them contrary to their way of thinking; but somehow in this great democratic, social organization of ours, there is an unwritten law that the will of the majority should prevail, and it seems that if this law should be applied to the question of night run it would be eliminated by a popular vote of the manufacturers themselves. In fact, it occurs to me that a popular referendum might be agreed upon, whereby the minority would agree to abide by the will of the majority.

The first reason I would offer as to why night run should be eliminated is that production is entirely out of line with demand and as long as there are day operators only, competing with day and night operators, there can never be any permanent or sufficient plan evolved agreeable to all parties. Thus, from a purely economic point of view, in order that all men can meet on an equal footing, it is necessary that night runs be eliminated.

Hundreds of mill men and hundreds of statisticians and economists have proven conclusively that the night run does not increase the permanent income of the organization, but even if there should be an advantage in night run in this day of commercial efficiency, which boasts of its proud masters, is there any one who would acknowledge himself so inferior as to be unable to compete with his confreres on equal basis. It seems to me that the man who advocates most earnestly the retention of night run is in reality fighting for an advantage which he thinks he has. This advantage is not one of mental or managerial superiority of the one over the other.

The fallacy of advantage is illustrated by R. E. Loper* as follows:

"Suppose a mill is running day times producing 1,000,000 pounds of print cloth per quarter, selling it for 48 cents per pound and making a net profit of five cents per pound after paying four per cent selling commission. The following results would obtain:

Total sales per quarter	$480,000
Net profit for the mill	50,000
Commissions paid selling house	19,200

"Now suppose the mill doubles its production by night running and thereby cuts its cost one per cent per pound. Suppose also several other mills do the same thus increasing the print cloth available for sale in the market 8 or 10 per cent. On the basis of past experience, this would soon result in a drop of at least four cents per pound in the selling price if the price of cotton remained t he same. Then the following results would obtain:

Total sales 2,000,000 lbs. at 44 cents per pound = $880,000 per quarter.

Net profit for mill at two cents per pound = $40,000 per quarter.

Commissions pair selling house at four per cent = $35,200 per Quarter.

The night run causes the mill to lose $10,000.00 and enables the selling house to make $16,000.00 more. This may not be an actual picture but it is highly illustrative and is suggestive of another phase of why some people who are not mill executives favor night run.

The night run destroys cooperation. Almost any undertaking in which there is a necessity for group action, group determination, there is partial or complete failure due largely to a disagreement over night operations; hence, no general plan for economic stability or economic betterment can be developed as long as the night run is the

*Textile World, February 4th, 1928.

policy of a part of the mills.

Socially, night operation should be eliminated. There is a constantly rising sentiment of public opinion against it, and while many people may think they do not care what public opinion is, it has been the experience of the human family that public opinion is the final deciding factor for or against a measure and the more slowly the opinion is formed the more surely is its effect. To show how public opinion is forming and how some mill men have progressed in their way of thinking, only recently I heard two mill executives state that they were not only for the elimination of night work, but they were fighting for an industrial and economic condition to be attained in their plants, whereby it would not be necessary even for the women to work in daylight hours and whereby they could stay at home and attend to their home duties and rear their children as other mothers did. These men are in the vanguard and so far ahead that many in this generation cannot appreciate their statements, but another generation will. We have only to look back from where we started and form a comparison with where they are today to see the wonderful change that has taken place, and then we must look forward forty years, and with geometrical progression, view conditions that will exist in those days, and perhaps sooner if we do not stand and block progress until death removes us from its onward march.

"The Support of Example."

"I believe that cooperative action on the part of the mills looking to the general education of the industry as to its problems and to the use of sound business methods by each is a definite and promising method which deserves all possible support. By support I do not mean merely paying dues to some trade organization. I mean the support of example. A mill which refrains from group activities such as exchange and discussion of information and exchange of view about the common problems of the mills is not merely refraining from these activities, but is positively discouraging them."—Walker D. Hines.

The night-run is anti-social. There are many good people who work at night and work because they so desire, but those who have carefully studied the night run, make the following statements: First, that as a general rule the night operators are inferior mentally, morally and physically. Of course, there are exceptions to this statement, but in the main the statement is true. The second statement, which is closely related to the first, is that the natural physical capacity, measured in ergs or dynes, is much less than that of the day run group; that their habits are more irregular, that their productive power is less; that the quantity of seconds is increased and that the susceptibility to disease is more marked; that absenteeism is, therefore, greater, as is also labor turnover.

The solution of the problems of the cotton mills is not in the survival of the fittest. In discussing this topic, I am quoting paragraphs from the address of Mr. Walker D. Hines, president of the Cotton-Textile Institute, made at the annual convention of the American Cotton Manufacturers Association at Richmond, Va., May 17th and 18th, 1928. While Mr. Hines was not discussing the subject of night run, but other phases of the industry, I want you to read the following statements and think of these statements as applied to this phase of our industry:

"I have tried to think of the reasons which seems to actuate some of the mills in objecting to a greater or less extent to the idea of cooperative action as a further aid to improving conditions in the industry, and in falling back upon the idea of the survival of the fittest as their excuse.

"First, there appear to be some mills exceptionally situated and having a trade in particular specialties where they feel entirely satisfied with their situation and their prospects. When such mills say that survival of the fittest will solve the problems of the industry they really mean that there are no problems of a pressing character to them individually and they have no special concern as to the solution of the problems of the great majority of the mills which are differently situated. But even the small class of mills so comfortably situated should remember that they are interested in the future and that their present comfortable position is subject to impairment if the merchandising policies of the industry generally are subjected continuously to the unsound policies of the less fit mills without the benefit of cooperation to ameliorate the unsoundness of those policies.

"Second, I believe there are a good many mills which are greatly dissatisfied with their own condition in that they feel that their opportunity for reasonable profits is greatly hampered, and, therefore, they are sympathetic with efforts to promote general attention to these matters, and yet they happen to be more comfortably situated for the time being than most of the mills and hence they hesitate to make even a temporary and perhaps only an apparent sacrifice for the sake of encouraging the industry in general to pursue sounder merchandising policies, as for example in trying to lessen overproduction.

"I believe that cooperative action on the part of the mills looking to the general education of the industry as to its problems and to the use of sound business methods by each is a denite and promising method which deserves all possible support. By support I do not mean merely paying dues to some trade organization. I mean the support of example. A mill which refrains from group activities such as exchange and discussion of information and exchange of views about the common problems of the mills is not merely refraining from these activities, but is positively discouraging them. A mill which by reason of a slightly more favorable position which it occupies for the moment, decides not to set an example at a time of general overproduction in favor of the undoubtedly sound general principle that production ought to be kept in line with demand, is discouraging in the most direct way the development of the principle and practice of balancing production and demand. On another occasion even the particular mil may feel the immediate importance to it of observation of this principle, but in the meantime, it may have served as a great discouragement to progress in the direction which might turn out to be of benefit.

"One of the greatest benefits of the existence of such a spirit of cooperation is in establishing in the minds of buyers that the cotton mills have a sense of solidarity and have reached a state of development where they think alike to a considerable extent as to some of the fundamentals of merchandising. The way for mills to establish this condition is to promote the exchange of information, and the discussion of their problems in the light of the needs of the general situation. A mill which does not do this and remains aloof is helping to create the impression upon the part of buyers that there is only a partial sense of unity as to the problems of the mills and only a partial and very poorly developed ability on their part to make progress with respect to their common problems.

"I do not believe that the mills, (which are only a small minority of all), which proceed along these lines will find a satisfactory answer in the view that the doctrine of the survival of the fittest is going to afford a satisfactory solution for these problems in which these mills after all have a vital interest.

"It is a fair question, has this policy permanently promoted the interest of the mills which in disregard of the general condition of the industry kept on running full during this period of general overproduction? They have inevitably disposed of their goods on the artificially low basis created by this general overproduction. They have seen customers constantly perturbed for fear of a still more acute crisis with an even lower artificial level. They have seen the level of prices of the manufactured goods fall far below, and keep far below, any parity with the price of cotton. They have seen buyers apparently convinced that not yet have the units of the cotton textile industry reached the point of a reasonable ability on the part of each unit to govern its own actions with a view to the general conditions prevailing in the industry, which in fact, are

bound to affect each unit. Are these things beneficial to the mills which kept on running full and so contributing to the maintenance of the general condition of overproduction? Is it not fair to suggest that their own interests would have been better promoted if they had participated in correcting a general condition of overproduction whose existence was contrary to their own and the public interest?

"So I say without hesitation that the doctrine of the survival of the fittest does not offer a solution of the difficulties of this industry and that to rely upon it, or employ it as an excuse for an unwillingness to consider the general conditions and needs of the industry, confuses the real issue and obstructs and postpones the finding of an adequate solution."

Every industry that operates with social satisfaction must keep abreast of the social conditions of its time and must keep its policies in harmony with the progressive industries that operate industrially in the social order. The development of the textile industry in the South has been one of financial and industrial aggressiveness. It has been an intense struggle to attain success, and in such a fight in which there is a dominant element of selfpreservation, there has been a tendency to develop marked individuality and selfishness, also a development of the ego. This has been true of all industries, but after success has been attained and the accumulation of material independence has been accomplished practically all industries begin to look around with dissatisfied feeling of effort and the second period of industrial evolution begins to assert itself, in that the great purpose of life is not in securing material things, but in the building of a great, sturdy, independent, thrifty citizenship, and all industries that are really progressive and keeping abreast of the times are incorporating this idea in their program. This idea is not new, nor does it demand any proof because there are so many examples within the knowledge of every one who reads and thinks.

Many policies have been a part of the industry that at the time were necessary, and although at the present stage of evolution a retrospect brings a certain revulsion of aesthetic feelings; yet a social and economic analysis of the times at which they were incorporated somewhat justifies many of them. The time has come when there must be a lopping off of many of these policies. Industry has a soul and it must be given an opportunity to function. The leaders of the industry must be followed in their advanced thinking, because they represent that which is best.

At no time in the history of the world has so much attention been given to the idea of building people, and inasmuch as the great mass of workers are still thinking individually and selfishly, they are unable to think other than selfishly for themselves, and their desires and edicts cannot safely be followed.

The leaders of the textile industry say that night work must be eliminated. Our great national economists say the same thing. Public opinion is surely coming to the forefront with the same edict. The laws of health and hygiene add their voice to the statement. The doctrine of the survival of the fittest may eventually win, but it takes generations for this law to operate, and its application is extremely drastic, and its results are cold-blooded and feelingless.

The progress of the world declares that the soul of industry shall exercise itself, that material wealth is not the chief end of life, that the building of a great social order is the great goal to be attained, and night work unquestionably clashes with this idea.

If all of these things are true, then what will the textile industry do about its night run? The success of the industry, in a large measure, depends upon the answer given. The social and industrial respect that the industry will have in the years to come depends upon this same answer. The question of night run is a fundamental issue. It is not dependent upon any other. It is a primal issue, it is not second to anything. Shall the textile industry remain a democratic institution guided by the progressive thought of the majority of its people? The industry and the public await the answer.

George S. Harris Explains New Uses for Cotton

HERE are a few answers to the questions which many cotton manufacturers are asking—"How is it possible to increase the consumption of cotton fabrics in an industry as old as this?" and, "Is it possible to find new uses?"

Osnaburg, one of the least expensive fabrics, used until recently for cement shipping containers, has been established as an economically sound material for this purpose, and has resisted the inroads of a competitive fiber. With the increased use of color in decorations, osnaburg is being widely used as a suitable fabric for hangings, couch covers, etc.

Heavy sheeting and light duck, impregnated with a paint compound, with letters stenciled on it, is being used as road markers, and airway markings on roofs of towns and cities.

It has been proven that a 108-inch bed-sheet makes a better looking, more comfortable and economical bed than the 90- or 99-inch sheet now in use. This market involves a possible increase of approximately 20,000,000 square yards of white sheeting per year. The use of color in sheets increases the opportunity still further.

Beginning last Spring there has been a decided style trend toward the use of cotton for wearing apparel—very marked in dresses selling between $20.00 and $100.00, extending to an increase of 31 per cent in dresses retailing below $5.00.

Cotton fabric is an excellent material for use in a new method of laying cement roads, calling for an open mesh fabric laid on top of a six to eight-inch reinforced base course and covered with the two or three-inch finished course of the road. Cotton fabrics for this have been developed. A brand-new use for cotton, which will provide an additional annual output of 5,000,000 yards.

A South Carolina highway engineer developed a use of cotton fabric in surfacing rural roads. He grades the road, pours on hot tar, then lays a cotton fabric, which is covered with asphalt or tar and a final cover of coarse sand and gravel. The potential market, if this experiment which has lasted a year and a half is considered successful, is the surfacing of 5,485,000 miles of such roads now unimproved.

Extending a present use of cotton fabrics for awning purposes will provide a potential increased market existing in this field of, conservatively, 25 million yards per year.

These are but a few of the ways in which it has been definitely proven that the uses of cotton may be expanded and extended. The foregoing information is abstracted from an address made by George S. Harris, president and manager, Exposition Cotton Mills, Atlanta, Ga., before the Southern Manufacturers Sales Conference, held in Atlanta on October 22nd.

What is Proper Textile Merchandising?

"Find Out What Your Customer Wants; Let Him Know He Wants It; and Make It Convenient for Him to Buy It"

By Cason J. Callaway

PROPER merchandising consists in the first place of finding out what the public wants; second, letting the public know that they want it, and third, making it convenient for them to buy it. The procedure followed by cotton mills, on an average, is exactly opposite. First we build a mill; second, we make the goods best adapted to that mill; third, we keep lowering the price until this product can be sold. I believe this will be generally admitted, and that this is an uncomfortable state of affairs and should be corrected.

An experienced advertising specialist told me recently that the cotton textile industry has done little toward advertising its product—in fact so little was done in a cooperative way as to amount to nothing.

Were the use of cotton goods comparatively new, we would realize the necessity of study of the markets; the necessity of creating additional uses by improving our product; making our product more convenient and attractive to the ultimate consumer, and bringing our product before his attention by more and better advertising. I do not believe that it would be any more important in the case of a new industry than it is in ours.

MR. CALLAWAY

who is an example of the progressive southern textile manufacturer who is giving attention to the marketing and distribution of his products, discusses in the accompanying paper, the ramified benefits which would come to the textile industry by coordinated activity in advertising cotton and extending its uses. This paper is an abstract of an address by Mr. Callaway at the recent Southern Manufacturers Sales Conference in Atlanta.

It is seldom that we find a manufacturer who is both production-minded and distribution-minded, and I believe that on a whole, there are a great many of our men who are ably informed on the subject of production, who have not given a good deal of attention to the ultimate use of their goods. This brings me to the point of cooperative effort. In studying the activities of cooperative group advertising, it is evident that one of the great benefits derived, which is not so well known, is the influence on the men within the industry, as well as on the prospective customers without, in that it tends to make each manufacturer strive to make a better product, in line with what the advertising promises, and to finish their merchandising job by doing advertising of their own. As a personal illustration of internal aid of advertising, one of the plants in our organization manufacturers trousers, and does regular advertising through the trade papers. This division employs about 250 women sewers. A copy of each advertisement, including the catalog, goes to each of these operatives and the advertisements are put in frames on the walls. This has had a marked effect for good toward getting the operatives to realize what has been promised; toward getting the operatives to have a pride in our goods and toward accomplishing with greater ease, a finer quality of work.

Discover New Customers!

The great advantage of making the individual manufacturer market-minded is that thinking along this line, they think of individually expanding business instead of swapping customers, and this line of thought within the industry would be extremely valuable toward increasing consumption. If each executive in our industry had given over the last ten years one-half as much time toward thinking of an additional outlet for his product, as he has given toward getting a customer already furnished by someone else, to buy his merchandise instead of the other fellow's, I believe that the expansion from this source alone would be tremendous.

Let us compare the expansion of our industry along with the expansion of our country for the last ten years, with the information that is available. The increase in population between 1914 to 1925 increased approximately 20 per cent. The increase during that time of the total value of the products of cotton goods was 159 per cent; of paper and wood pulp 192 per cent; iron and steel 200 per cent; silk 218 per cent; rubber 317 per cent. These are all commodities which have been in use for a long time and represent, leaving out the textiles, an average increase of 232 per cent, or an average of 73 per cent greater than that of textiles. Had our industry made the same progress as the average of these others, it would have increased our business during that period, over five hundred and eleven million dollars, and instead of there being a depression due to over-production, we would all apparently be busy, prosperous and happy in our work. The manufacturers of each of these commodities, in proportion to their size and without exception have done a great deal more toward finding out what the people want, letting them know they want it and making it convenient for them to buy, than we have both collectively by group study and advertising, and as individuals, and their reward has been great.

To take an example of one closely akin to ours, which has had enormous growth, the rayon industry increased in pounds from 1,500,000 pounds in 1914 to 51,000,000 pounds in 1925, an increase for the same ten-year period of over 3,000 per cent; and is still increasing at the rate of 12 per cent per year.

Let us go over a few of the industries where cooperative advertising has been a benefit. I believe their accomplishments have been so universally successful that similar results can be accomplished by us, and that each manufacturer should become familiar with them, to determine how this tremendous benefit may be enjoyed by us. This in my opinion would be followed by his active aid in creating a similar program in the cotton textile field.

Early in 1927 the American Institute of Steel Construction initiated its first national advertising campaign for structural steel. The campaign was accompanied by a marked increase in production and sale, making 1927 a record year. They plan to continue and extend over this work.

The Associated Knit Underwear Manufacturers of America, were faced with a tremendous decrease in the use of their goods, and to combat this, the industry committed themselves to a two-year program, early in this year. The consumption of knit underwear is already showing a very satisfactory increase, for which the members give credit to the Association activities.

Some Samples of Cooperative Advertising

Associated Tile Manufacturers began cooperative advertising in 1922, on a modest scale, yet their sales for 1923 were 175 per cent greater than prior to this work. The Association is now spending $125,000 annually, and the sales for 1927 show an increase of 350 per cent over pre-cooperative work.

Copper and Brass Research Association was organized in 1921, and represents approximately 90 per cent of the industry. Its activities are public education through advertising, technical and commercial research to develop new uses, improved quality and dealer cooperation and goodwill effort among the trades and crafts having a bearing on metal consumption. Since the existence of this association, the consumption of brass in the United States has increased 125 per cent.

The ice manufacturers, troubled by the great influx of electrical refrigeration, turned toward cooperative advertising to save their industry, and have gone forward instead of backward, from its results.

The California Prune and Apricot Growers Association began national advertising of prunes at a time when the prune was probably considered the most lowly of all fruits, when they were eaten only from a standpoint of economy. Today prunes are on the menus of the country's best hotels, and a regular food in the most carefully and expensively conducted homes, competing from the standpoint of one's enjoyment and their good qualities. The growers are now able to market their crop at a profit, even in large yield years, which prior to the cooperative advertising would have been impossible.

For our cotton textile industry, whether cotton is 18 cents or 19 cents a pound has very little to do with the consumption, or at any price, the addition of a fraction of a cent per pound on the cost of raw material, would be negligible, from the standpoint of consumption. Let us suppose, for instance, that each manufacturer added to his cotton cost, one-fifth of a cent per pound, by paying this amount into a cooperative effort toward research work and toward informing the public and themselves of the desirability of cotton goods in general, and the adaptability of specific cotton goods for individual purposes. We would have $7,000,000 for that purpose. I believe that this beginning would be met so favorably by producers, manufacturers and consumers alike, that it would be found practical and profitable to add gradually to the amount per pound expended.

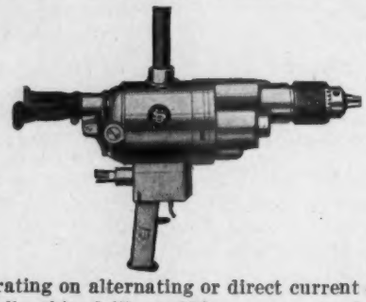
In discussing this subject with people informed on both textiles and cooperative advertising, I find their most conservative estimate on the increase that this would bring to cotton manufactured products, to be five per cent per year, in addition to the natural growth brought about by increased population and purchasing power. With five per cent increase in consumption, it would be only a matter of one or two years before all of us would be selling at a basis of a fair return for the product of our labors, and only a short time thereafter until new mills would and should be built.

I would like to stress in conclusion that the manufacturers become market-minded as well as production-minded, and think of their industry and their product in terms of its ultimate consumption, preparing themselves for cooperation in merchandising and advertising, and for individual advertising. Cooperative merchandising leads the way for individuals, and in that way creates marked additional outlets far additional consumption by the efforts of their individual sales through the combined efforts.

The products of cotton are so superior for so many purposes, and their practicability when tried is so positively demonstrated, that a fair knowledge of these qualities by the ultimate consumer in covering his known and growing requirements, is all that is necessary to make the growth of our industry an outstanding feature of America's future progress.

A New Heavy Duty Drill.

In response to demands for a powerful, low-speed ¾-inch heavy duty drill for continuous heavy duty service, the United States Electrical Tool Company, Cincinnati, Ohio, has placed a drill of this type on the market. A universal



motor, operating on alternating or direct current of 60 cycles or less, pulls this drill at 350 r. p. m., load speed, the company states. The drill is equipped with SKF ball bearings, chrome nickel steel gears, double silk insulated enameled armature wire, and three-jaw screw back chuck for straight shank drill bits, etc.

Stewart Bros. Paint Co. Will Open Spartanburg Branch.

The Stewart Brothers Paint Company, Alliance, Ohio, will begin construction immediately upon a modern fireproof building at Spartanburg, S. C., to house a southern branch plant of the company, it was announced by the Spartanburg Chamber of Commerce. The company will manufacture a complete line of architectural and industrial paints, enamels and varnishes. Plans for the building, which will contain 12,000 feet floor space, have been prepared by Lockwood, Greene Engineers, Inc., who will have charge of construction.

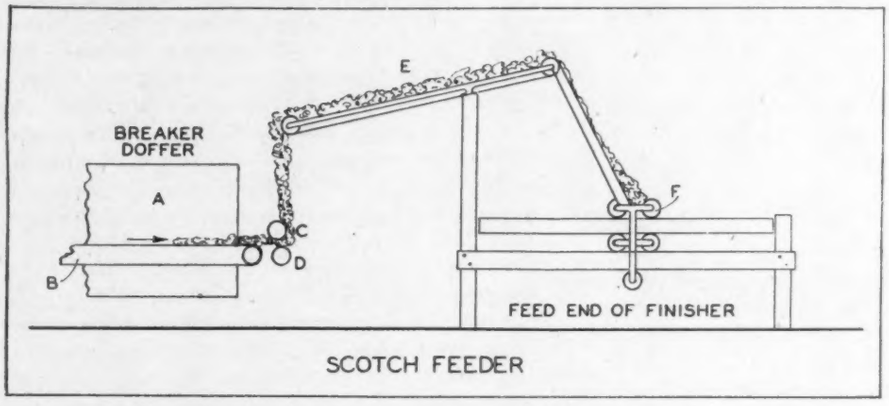
Cotton Waste and Its Utilization

The Feeds Used After the Breaker Cards; and a Discussion of the Waste Mule Frame Are Discussed in this Installment

By Albert E. Lewis

THIS article is the third of a series of four articles by Mr. Lewis covering the machinery and processes involved in the utilization of cotton waste and the manufacture of products from waste.

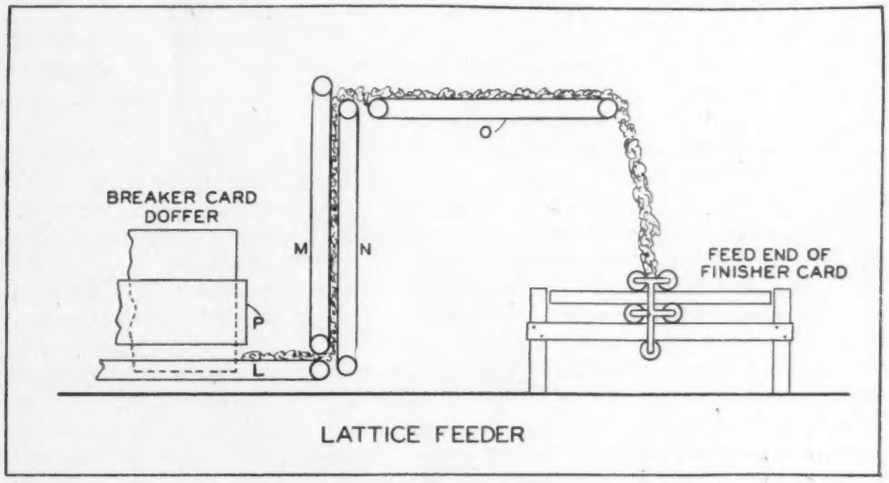
THE Scotch type feed is used at the delivery end of the breaker card, so as to feed the finisher card, and the waste is stripped from the doffer *A* by a stripping comb as usual. As it is stripped by the comb it is delivered onto the lattice B and then taken sideways to rollers *C* and *D* and is delivered, as shown in the rough sketch, over the swivelling lattice *E*. The thick sliver of waste is consolidated by the rollers *C* and *D*. The cotton is eventually delivered at the feed end of the finisher card and as cradle *F* has a backwards and forwards movement the cotton is continually traversed and laid in an even and double form, and is then taken up by the licker-in. The main feature of this arrangement is the half turning of the narrow sliver or ribbon of cotton which places the fibers at right angles to the position they left when leaving the doffer *A* of the breaker card, which as explained before, causes the fibers to be more crossed which is the object sought in the Scotch feeding system. The resultant yarn is fuller than if Scotch feed were not used.



SCOTCH FEEDER

Lattice Feed.

The web of cotton waste from the breaker card drops down a traversing plate *P* and is deposited in layers one above the other until a sheet about 15 inches wide and of many thicknesses of web are upon the bottom lattice *L*, which takes the cotton to the side of the machine, after which it is taken up vertically by lattices *M* and *N* the horizontal *O* which carries the cotton to the feed end of the finished card. The web is then delivered to the licker-in the same as in the Scotch feed system. The main difference is that the fibers are pointing in the same direction as when they left the doffer of the breaker card, so it would appear that the Scotch feed is more advantageous for waste finisher cards.



LATTICE FEEDER

The Waste Mule for Condenser System.

The waste mule has many points of resemblance to the fine mule. The exceptions are the bobbins, rollers, and the spindle drive. There are usually two lines of bottom rollers one inch in diameter and a leather covered one 1¼-inch resting between them on top and weighted by means of hooks which bear on the top roller and are connected to the weights. In some cases self-weighted steel rollers are employed. In both cases no cap bars are required, as the top roller rests on the two bottom rollers.

Naturally the number of ends per roller vary with the class of work. The coarser the counts being spun, the less the number of ends. The back roller is driven from the front roller by a carrier wheel, and the back roller drives a traverse motion which gives about 1/2-inch traverse. It will thus be seen that there is no roller drafting. The draft is caused by the excess of speed of the carriage over

the rollers.

Traveller clearers are sometimes used to clean the rollers, but are not always employed. The general practice is to clear the rollers by revolving clearer rollers covered with flannel, but which do not traverse, and which give the best results.

The creel bobbins which contain about 30 ends are driven by frictional contact with the drums, upon which they rest. A slight tension draft is an advantage here. Should the ends become broken on the finisher card, it causes a "hole", and the operative must allow the end to run down, until the rovings are of the same diameter again. Even if they are pieced up, the smaller diameter of the roving wound on the bobbin will cause excessive tension and strained yarn. Too many such ends will result in a reduction of the spinners wage, as they are usually paid by the weight produced.

Full bobbins are kept until required up over the bobbin in use located in stands which should not permit of rubbing between the one stocked and the one being spun.

Three-Speed Machine in General Use.

The treble speed mule is practically universally used now-a-days. The complete cycle of operations is as follows: The rollers deliver the yarn at a constant rate throughout the draw. The first spindle speed obtains up to about 2 feet from the rollers, then the second speed for the next 2 feet, and the highest speed operates and continues to the end of the draw and the twist wheel completes its revolution.

The times of the various speeds coming into operation may be adjusted slightly. As the draft again is solely obtained by the rates of speed of spindle point over the roller delivery, and the yarn is best drawn when it contains the least twist, the extra carriage speed should be delayed as long as possible.

There is a dual drive to the machine from the counter shaft, the proportions being as 3 is to 2, the smaller pulley driving first. The rollers and carriage are driven from the same source, so as to ensure that both commence work simultaneously, otherwise disaster is bound to accrue.

A lever depressed by the carriage square, causes the second belt to be moved from the smaller to the larger pulley when the higher spindle speed is deemed necessary. This belt has been riding upon the loose pulley on the rim shaft hitherto, and now it is on the pulley keyed to the smaller rim. This causes the spindle speed to be accelerated, while the first pulley continues to drive the carriage and rollers at the same uniform speed. A tappet upon the twist motion now releases No. 2 strap lever, and allows it to move across the loose pulley onto the second fast pulley which is attached to a sleeve running through the backing off wheel and back bearings of the rim shaft, and drives the spindles through the larger of the two rim pulleys. In some makes of waste mules, retarding motions are used. These cause the mule to rebound slowly from the front stops, up to say 1/2-inch, when the final twist is such as to cause breakage through excessive torsion. These are only necessary when higher twisting than is customary is in use, and jacking appliances are also fitted. Soft oozy yarns are generally made in these machines, hence neither the retarding motion nor jacking motions are considered essential. There are no fixed standards either of twist per inch nor strengths, and different persons have to find their own.

As stated previously there are no draft rollers. The changes of counts are obtained by varying the ratio of speeds of carriage and rollers. The draft varies from 1.2 to 1.8 from 3s to 10s, and the hank bobbins from 2.5 to 5.6 in accordance with the requirements. It is preferable to keep the same cards to feed the same mules, and the changes in counts may be made at the same time.

As many as five draws per minute may be run on the lower counts, 3s. The yarn can be spun on the bare spindle with pasted bottoms, or perforated or through tubes, the former being used when the yarn is required for cop bleaching or dyeing.

The yarn can be packed, reeled or wound to cones or cheeses but it is usually conditioned before these operations take place. The waste mule on the Preparation System is more or less the same as the self acting mule as used for ordinary cotton.

There are three lines of rollers, the top rollers being generally solid rollers.

It is good practice where condenser spinning is in operation, to have one or two preparation mules. All the waste can be used up on the latter which obviates the necessity of putting it back, thereby upsetting the arrangements on the condensers. This waste can be mixed, if necessary, with inferior quality waste, or use up the cheaper qualities, which are considered inferior for the condenser spinning. The same machines can of course be used as previously mentioned as for the preparation system.

Waste Ring Frame.

The waste ring frames are practically similar as those used for spinning cotton. The modifications are necessary owing to certain features which are unavoidable. They are used to advantage where labor difficulties prevent the adoption of the mule. The points of countrasts between the ring and the mule for cotton, are analogous in the waste trade. The ring, of course is a continuous spinner, and the yarn produced from the frame is harder spun than the mule spun yarn. The creel is adapted to use condenser bobbins of about 22 ends, driven by frictional contact with the bobbin cylinder, with only a slight tension draft between this roller and the feed roller. On some machines there are the usual three pairs of draft rollers, while on others there are only three rollers, two of small diameter, bottom rollers, and a self weighted steel top roller, of larger diameter. With this type of machine to enable the draft to be obtained between the roller and the feed roller, a false twist is put in the yarn by passing it down a tube which revolves. There are two small projecting pieces on the top of this tube to assist this operation. This is called "false" twist, because the tube by revolving causes the yarn to revolve, but as the ends are both free it is not an actual twist. The yarn now passes between the feed rollers, through the guide eye and traveller on the bobbin as in ordinary ring spinning.

A certain English machinist gives the speeds and productions as follows: The spindle speed varies from 3000 to 6500 r.p.m. for 1s to 10s, and produces from 7.44 pounds to .75 pounds per 10 hours. The twist constant recommended is $\sqrt{c} \times 4$.

Using Variable Speed Motors for Spinning

By E. A. Untersee

Industrial Engineering Department, General Electric Co.

MANY improvements have been made in the manufacture of the ring spinning frame in the past few years, but it has long been recognized that driving them at constant speed, although very simple, is not entirely satisfactory as it does not permit the various operations to be carried out in a uniform manner nor does it allow the frame to be worked to its full capacity.

When driving a ring frame at constant speed, the tension on the yarn between the traveler and bobbin varies materially according to the diameter at which the winding takes place, resulting in an uneven build of bobbin due to the yarn being wound tight at the small diameter and considerably looser at the large diameter. The yarn tension at the guide wire, and also between the guide wire and the front roll, varies considerably with the widening at different diameters.

Although the variations of tension arising at these points are smaller than those between the traveler and the bobbin, the yarn at this point has very little twist as compared with the twist in the yarn when wound on the bobbin, and is therefore much weaker and causes considerable breakage of ends.

These uneven tensions are present at all positions of the ring rail from empty to full bobbin, and the uneven tensions due to variations in diameters are greater as the ring rail approaches the upper position.

The balloon or bulging of the yarn due to the centrifugal forces as it revolves around the ring cause additional stresses on the yarn. When the ring rail is in the lower positions and the yarn is wound on the larger diameters, the balloon is large and reduces in size as the rail moves upward to the smaller diameter position. As the rail approaches the upper position on the bobbin and the winding takes place at the small diameter, the balloon practically disappears and the danger of broken ends increases greatly, and quality of the yarn is affected due to increased tensions. Therefore, the maximum constant speed permissible is determined by these conditions, which last but a fractional part of the whole working time. During the greater part of the process of spinning, the speed of the spindles might be considerably increased beyond the speed determined from the conditions described, and, therefore, the maximum output of yarn is not fully obtained when the frame is driven at constant speed.

Many devices such as separators between the bobbins, which would permit the use of lighter travelers; movable guide wires which would ascend and descend in synchronism with the rail, have been used to improve the operation of the frame at constant speed, all of which were to some extent practical.

THE use of variable speed motors in spinning frames, to permit a gradual increase in the speed at which the yarn is wound on the bobbin as the size increases, is a subject that has been studied for years by machinery and other experts. The accompanying discussion of the problems involved in using the usual constant speed, and covering the possibilities of variable speed in overcoming them, is taken from a paper by Mr. Untersee, who is connected with the industrial engineering department of the General Electric Company, which was presented at the textile section of the American Institute of Electrical Engineers meeting in Atlanta on October 31st.

The basic trouble, which is unequal tension on the yarn while spinning, is not eliminated by any of these devices and the only way to further improve the operation of the ring frame and its production is by varying the speed during the spinning process.

From very complete tests and mathematical calculations of the various tensions and stresses on the yarn during the spinning process it has been proven that the tensions on the yarn depend on the speed, and by suitably varying the speed the tensions can be altered as desired and kept constant. The speed may be regulated so as to keep the tension between the traveler and bobbin constant, which improves the winding; or the tension between the guide wire and the traveler may be kept constant, improving the spinning. In either case the production is increased, since the speed is increased when winding on the large diameters, to keep the tension nearly up to maximum.

The difficulty with variable speed spinning lies in the mechanism needed to provide the speed variations. Various mechanical devices have been developed for varying the speed on a ring spinning frame.

At this point Mr. Untersee began a discussion of different mechanical means employed for this purpose, such as step pulley drives, cone pulley drives, belt slipping devices, and planetary gear drives, explaining that all of these had failed to meet the requirements. He then discussed various experiments with electric motors which had been applied, in the following order: wound rotor induction motor; direct current adjustable speed motor; multi-speed induction motor, etc. Concluding with the three phase brush shifting shunt characteristic motor, in the use of which he said evidently lies the successful solution of operating a ring frame at variable speed.

The important mechanical features which a motor for spinning yarn at variable speed should possess, he enumerated as follows. enclosed construction; positive ventilation; minimum size; simple speed control mechanism; reversing mechanism; and accessibility to working parts of motor. In electric performance, he said, the motor should have: good load speed characteristics; broad speed range; low temperature rise; good starting torque under all speed conditions; and high power factor and efficiency over entire speed range. Continuing he described the type of motor he selected:

The development of the alternating current three phase brush shifting shunt characteristic motor in recent years has met with so much success in other lines of manufacture where it is necessary to maintain accurate speed regulation that it could not be overlooked for the spinning field. Experiments have been intensively carried on for the past four or five years with this type of variable speed motor and results show that it meets the most exacting requirements in maintaining speed regulation which will allow constant tension on the yarn during the entire spinning process.

A short description of this type of motor, its operation and characteristics, is as follows:

This motor may be compared with the wound rotor induction motor having its primary winding in the rotor and its secondary on the stator. In addition, this machine has an adjusting winding in the rotor similar to a direct-current armature winding which is connected to a commutator. The motor is provided with two brush holder yokes arranged to shift in opposite directions.

One end of each phase of the stator (secondary) winding is connected to brushes on one brush yoke, and the opposite ends are connected to brushes on the other yoke. When the brushes, to which each end of a secondary phase is connected, are on the same commutator segment, the adjusting winding is idle, the secondary winding is short-circuited, and the motor runs as an induction motor with speed corresponding to the number of poles and frequency of supply. As the brushes are moved apart, a section of the adjusting winding is included in series with the secondary winding, causing the secondary winding to generate a voltage to balance the voltage impressed upon it by the adjusting winding, thereby causing the motor to change its speed.

With the brushes in low speed position, the motor gives from 140 to 250 per cent of normal torque at starting, with 125 to 175 per cent of full speed current. The maximum torque at low speeds is from 140 to 250 per cent of normal torque and increases for the high speed position to from 200 to 400 per cent normal torque.

The efficiency remains nearly constant over the greater part of the speed range, but drops some at the lower speeds. The average efficiency is high as compared with that of the wound rotor induction motor with secondary resistance or when compared with direct current motors with necessary alternating current direct current conversion apparatus.

The power factor is very high when the motor is running at high speeds. At synchronous speed, the power factor is similar to that of an induction motor of similar rating.

The decrease in speed from no load to full load, at high speeds, is between five and ten per cent, and at low speeds, slightly more according to the motor rating.

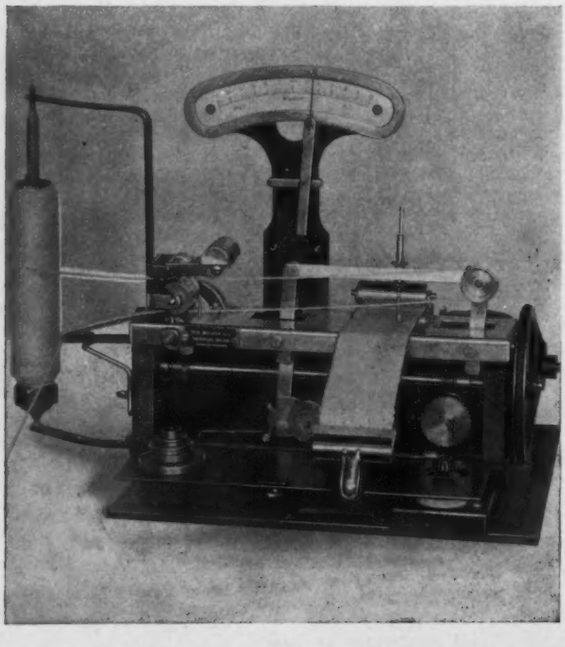
It may be operated in either direction of rotation by interchanging two of the line leads, as on an induction motor, and setting the brush rigging for the desired rotation.

Results of actual tests made with this type of motor show between ten per cent and twelve per cent more production and better than 50 per cent less breakage of ends during the spinning process.

Summing up the entire situation it can be said that when the proper speed curve has been obtained for any given yarn the resultant advantages from the use of such a variable speed motor will be: Maximum production of yarn; better quality of yarn; more uniformly wound bobbins; increased yardage; minimum breakage of ends; and more of the operator's time available for cleaning machinery and other duties.

Automatic Tester for Twist in Roving

The device shown in the accompanying illustration is an automatic roving tester for indicating how much twist roving contains, regardless of twist, length of staple, humidity, etc. It is being marketed by the Belger Co., Newton, Mass. Contrasted with the usual method of testing by hand, this automatic tester tests mechanically, leaving out all variations due to the human element and maintaining a uniform standard all of the time, with a pre-determined draft resistance. The apparatus is motor-driven.



The roving is drawn from the bobbin by two feed rollers, which in turn are connected to a delivery apron, after the roving is passed over a tension roll, connected to the indicator of a scale and the pen of a recording apparatus for making a graph. The indicator on the scale shows whether the roving is twisted soft, medium or hard. The pen records a graph line on paper, showing continuously the exact draft resistance of the roving. Each size of roving has a certain draft resistance which is governed by weights put on the lower lever. When the draft resistance in the roving becomes too light to withstand the pull of this weight, the apparatus records this fact on the graph and automatically releases the tension to avoid breakage of the roving. Presently the weight mechanism acts again and thus the apparatus records a continuous graph showing all the variations of the roving, it is explained. Bobbins can be tested full, half full, or practically empty.

R. & H. Long Service Awards.

The Roessler and Hasslacher Chemical Company, 709 Sixth Avenue, New York, on October 24th, in recognition of faithful service, gave well merited tribute to the 15 employees who had been with the company for over 25 years. The occasion was the annual banquet of the Parah Club, a social club organized by the members of the company, held at the Masonic Temple, Perth Amboy, N. J. After the banquet gold watches were presented to the men who had been with the company for 25 years or more. Six men had been with the company over 30 years and nine men for over 25 years.

Straight Facts About Straight Alkali.

Straight Facts About Straight Alkali, is the name of a booklet published by The Mathieson Alkali Works, Inc., 250 Park Avenue, New York. This booklet outlines the advantages and economies of using straight alkali solutions in the textile plant, etc.

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CURRENT TOPICS

The Two-Party System ---Is it Gone?

ELECTION figures indicate that Governor Smith received as many, possibly more, votes from persons who are classifiable as Republicans than from established members of his own party. At the same time Herbert Hoover received the votes of probably one half of all the persons who ordinarily vote Democratic. It is doubtful if more than half the people who went to the polls on November 6th voted truly as Democrats or Republicans for President. Two outstanding Democratic members of the United States Senate, one a recognized party leader, opposed their party's Presidential nominee. At least two nominal Republican Senators openly supported Governor Smith.

This phenomena may mean the approach of a re-alignment of the parties on fundamental lines of conservatism and liberalism—eternally hoped for in some quarters. Such probably is a vain hope. For no longer are there clear distinctions between what is conservative and what is liberal. How would the prohibition question, for example, be rated—or several other questions that are still religio-political? Is States' Rights a conservative or liberal question? If re-alignment comes it probably will be between a merged conservatism-liberalism and outright radicalism. But can true radicalism prosper in this marvelously prosperous land? With all of its seeming maknitude at times, genuine radicalism is only fragmentary here. It will be a long time before it can assume here anything like its proportions in Europe.

What the recent election probably indicated most as to the parties is deterioration of political parties. Professor Seigfried, the French scholar, in his book *"America Comes of Age,"* says that our major parties have ceased to be political parties in all but the sense of spoils. The real parties, he says, are the leagues and associations which now look after the interest and doctrines of organized groups. He holds that political method in this country is thus becoming like that of the multi-party system in France and Germany. One can name several leagues which wield authority at least more definitely within their spheres than either of the major political parties can exercise in theirs.

The subject merits careful study by thoughtful persons, particularly in the South, where traditional political solidity has been abandoned, probably for good. People of the section know well the evils of a one-party system that has been for long in fact a no-party system. Many philosophic students of government say that the two -party system is essential to the maintenance of the Anglo-Saxon tradition of freedom with order and concentration of power with responsibility for its use.

Russell Leonard Urges Caution

THE cotton textile industry may have turned the corner, as President-Elect Hoover has stated, but there is plenty of evidence that the turn is only slightly perceptible, and that the corner may be a very gradual and gentle curve rather than a right angle turn. It is a time when sound economic thinking and acting is especially necessary, and when the continued lack of it may lead to calamitous results. The industry has an excessive productive capacity, and yet we see the promotion of certain new plants which have no economic justification whatever. Added production at this time is an economic ill wherever the plants are built. It makes competition more severe among the mills of the South, rendering impossible both profitable operation and steady employment for labor."—From a statement of Russell Leonard. treasurer, Pepperell Mfg. Co., made at Opelika, Ala., recently.

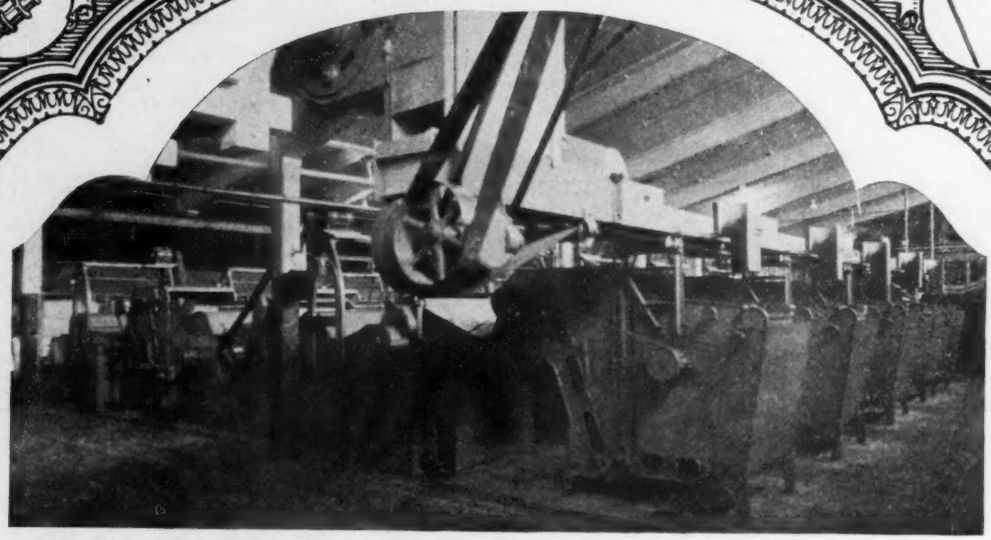
Mergers in the Textile Industry

THE AMOUNT of rumor of and interest in mergers of various kinds at the present indicate that many minds are weighing the wisdom of the adjuration given recently by a convention speaker: "Get *Big!*" There are mergers and rumors of mergers in practically every phase of the country's commerce—production, manufacturing, distributing and retailing—and the churches, even, if credence be given a newspaper report, are considering seriously the economic values of consolidation. Practically all classes of business are undergoing the effect of these groupings of interests. The textile industry is no exception to the rule—rather, in fact, many feel that due to its complexities, this field offers most interesting opportunities for such re-organization.

Consolidation is coming to textiles in various ways—horizontally by combinations of manufacturing organizations; vertically by alignments of mills, selling agencies, converters and distributors. In so complicated an industry, any such movement has adequate opportunity for ramified activity. One outstanding phase of the movement in textiles—what is known as the Loring plan—is thoroughly discussed in the able article on page 129 of this issue. The textile interests everywhere, of whatever direct alliance, are following the progress of this particular endeavor as a sort of a test of the idea in the industry. Almost daily come rumors and reports of proposed consolidations of various kinds. Most of them are promptly denied.

But regardless of the authenticity of these individual reports, it is logical—and wholesome—that the textile leaders, as the thinkers of the industry and as broad, progressive business individuals, should give deliberate consideration to the merger's possibilities. That they are doing this is evident; in many quarters the subject transcends practically all other major topics of discussion. Because of this consideration of the subject, regardless of individual opinion, the impression persists that much of a wholesome and helpful nature must develop, if only from the serious application to the industry's ailments which such study necessarily requires.

THE automatic loom, which hitherto has been an American monopoly, has been introduced in the Lancashire cotton industry," says the Monthly Journal of the British Empire Chamber of Commerce in the United States. The Vickers Company is manufacturing the machines and hopes to be turning out forty a week by the end of this year.



Langley Mills Install Saco-Lowell's New One-Process Pickers

with Synchronized Control

THE Langley Mills, Langley, S. C., have changed their whole mill onto Saco-Lowell One-Process Picking. Five new One-Process Lappers have been installed, as illustrated above, and are now running night and day to the complete satisfaction of the mill.

Complete details of this new machine, with synchronized control, are published in the July issue of the Saco-Lowell monthly "Bulletin." If you have not received a copy, write for this special edition and ask to have your name put on the mailing list.

Counting those already in operation and those orders now on our books, we have sold over fifty of these One Process Pickers. Among the mills installing this machine are:—

The Anniston Mfg. Company
Langley Mills
Pacific Mills
Boott Mills
Chicopee Mfg. Company
Lanett Mills
Alice Mfg. Company
Oconee Mills
Roxboro Cotton Mills
Athens Mfg. Company
Exeter Mfg. Company
Dana Warp Mills
Brandon Mills
Berkshire Cotton Mills
Ninety-Six Cotton Mills
Greenwood Cotton Mills
Saxon Mills
Aragon-Baldwin Cotton Mills
Roanoke Mills Company

SACO-LOWELL

MANUFACTURERS OF TEXTILE MACHINERY

147 Milk Street, BOSTON, MASS.

GREENVILLE, S. C. CHARLOTTE, N. C. ATLANTA, GA.

Government by Corporation

SEEING that government by boards and commissions is beginning to meet with disfavor, proponents of bureaucracy now turn to government by corporations. Since it is evident that the people of this country still believe in the tradition that government, as such, should not go into business, the advocates of socialistic adventures now advance the doctrine that there is no reason why government should not own and manage corporations which engage directly in business activities. This relatively new doctrine and practice meets with favor in quarters where the principles which are involved in it are abhored.

The corporate device of course has long been used by government. Municipalities, for instance, are incorporations set up by states. Governmental units often own stock in private corporations. But the setting up of corporations, owned and managed by government, to perform outright industrial or commercial functions is comparatively new in this country. The Federal Government adopted the practice during the war for the purpose of dealing with emergency situations. It is now beginning to make use of the practice as a fixture. Two of its war-time corporations have been given franchises in perpetuity. Congress attempted at its last session to put its establishment at Muscle Shoals in the hands of a government corporation with power to build another dam and power plant. Most farm relief plans call for the formation of giant corporations to be owned, controlled and financed by the government. Use of the device has been considered in connection with the coal and petroleum problems.

The theory is that the corporate method puts governmental operations on the same basis that are occupied by like operations carried on by privately owned corporations and individuals. Managers of a government corporation can be freed of most of the red-tape procedure which encumbers an ordinary bureau. Such a corporation may sue and be sued like any other. Its balance sheets supposedly give a clear view of its financial affairs.

But no government corporation *actually* is on the basis of private corporations. Every one of them has certain advantages belonging to government as a sovereign power. None has to satisfy investors as to earnings. Having an inexhaustible public treasury to draw from, none has to make money. The managers do their own accounting, a practice not allowed even in any well-directed private corporation. Even when funds are handled honestly, the showings made for government corporations invariably are faulty. One, for instance, has recently been showing a "profit" on certain operations. But in doing so, both investment and depreciation are ignored; also the balance-sheet makes no disclosure of the fact that public funds otherwise account for a large proportion of "earned" revenue. The operations have been carried on ostensibly for putting them on basis attractive to private capital. Now, however, the seeming "profit" is argued as a reason for not turning the operations over to private interests.

These Federal Government corporations, no matter how seemingly like other business organizations they be, cannot be compelled to pay state or local taxes. They are as far beyond local and state laws as the postoffices. They can be endowed with practically every right and advantage possessed by the Government. There can be no such thing as true competition between them and private corporations or individuals. Wherever they operate private interests simply have to get out.

The tendency towards setting up government corporations is an evident move toward nationalization of business and industry. Yet business and industry have rather abetted the tendency.

President-Elect Herbert Hoover

BY the time this appears, the excitement and furore which was climaxed by the election of Herbert Hoover to the Presidency of the United States will have subsided; business generally will have settled down to a more undisturbed condition—and on a more encouraging plane, with textiles sharing notably in the improvement, following a rather extended period of lethargy, compared with most other leading industries. Speculation and attention will be turned more directly upon the man chosen to guide the destinies of the country for the next four years.

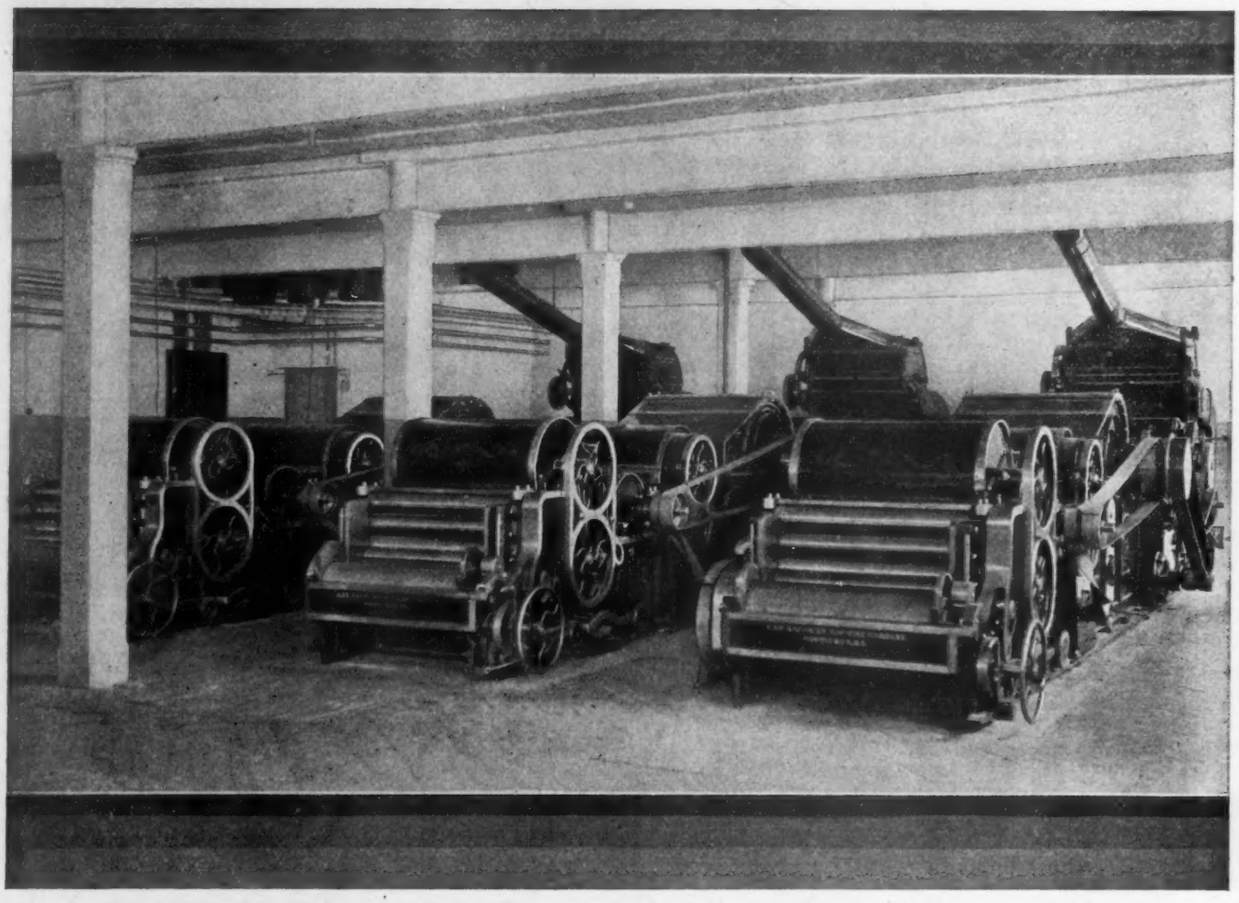
On many of the campaign issues, Hoover was not very explicit in his statements. He was assertive and positive, it is true, but little that he said in the campaign in many respects, need interfere with his doing what he desires along those lines. Moreover, he is a big enough man to know, with Emerson, that a foolish consistency is the hobgoblin of small minds. Herbert Hoover's certainly is not a small mind. Men of greater intellectual sweep and boldness have been made President, but none other had a mind that was better trained for, or inherently more suitable to the needs of the office at the time. If, as President, Hoover always is Hoover and doesn't try to step out of character, the next chief executive of the nation should make for himself a place in history beside the greatest among his predecessors.

Aside from one or two of the "soldier" Presidents, Hoover is the less of a politician than ever before was elected President. His very inclination will be towards exercising the chief magistracy in the most non-partisan way possible. The singular vote given him, and its distribution, should abet his inately non-partisan temperament.

Hoover is basicly a materialist. Despite his identities as a philanthropist, Hoover's most intense feelings are for things. His humanitarianism rests on a strong property sense. He can't imagine anybody being free, contented and happy, unless well-fed, well-clothed and well-housed. He isn't without a rudimentary spirituality, but with him needs of the body come first.

The election result makes evident that such is at least the present mood of the country. At present the people of the United States want, before all things else, prosperity. If anyone as President can make prosperity ample and assured, that man is Herbert Hoover.

"Chinese cotton mills have had a six months' period of unusually profitable operations," a United States Department of Agriculture commissioner reports. Sales of goods in the interior have been good. It is predicted that production of cotton in China will be ten to twenty per cent less than last year's large crop, which means larger imports of American cotton. Japanese buying of American cotton is expected also to be greater unless Chinese boycott of Japanese cotton goods prevents. "Japanese mills have been developing in recent years toward spinning finer yarns," says a Federal Government agent.



MODERNIZE for Profit

WE have co-operated in modernizing many of the outstanding mills of the country. Layouts for maximum efficiency, and modern attachments will increase quality or quantity of production, and reduce labor costs. We recommend new equipment only when the savings effected will pay a satisfactory profit on the investment.

If you are losing money, possibly we can help you get back in the profit column. If you are making money, we may be able to increase your profits.

At any rate it costs nothing to have an H & B representative check over your equipment. Write and we will have an experienced man on the job at once.

H & B AMERICAN MACHINE CO.

PAWTUCKET, R. I.

Southern Office: 814-816 ATLANTA TRUST CO. BLDG., ATLANTA, GA.

BUILDERS OF COTTON PREPARATORY AND SPINNING MACHINERY

What the Southern Mills are Doing

IT HAS been announced that the contract for the construction of the plant of the Bemis Bag Company, Talledega, Ala., has been let to the Fiske-Carter Construction Company, Greenville, S. C. All of the buildings will be of brick, steel and concrete construction. The mill will contain about 30,000 spindles and 750 looms.

Announcement has been made that the Strowd-Holcomb Mill, Birmingham, Ala., will enlarge their mill from 8,300 spindles to 30,000 spindles.

The Morrilton Cotton Mills, Inc., Morrilton, Ark., have again resumed operations after being closed down since last May. At present only part of the machinery is being operated, but it is expected to have all the machinery running full time by January 1st.

The new machinery has been installed in the Primrose Tapestry Company, Inc., Rome, Ga., and production is expected to be started by November 1st.

The product of the Rountree Cotton Mills, Inc., Meridian, Miss., is being changed over from gray goods to denims, hucking stripes, cottonades, etc.

The Piedmont Spinning Mill, Gastonia, N. C., has been purchased by the American Cotton Mills and American Metal Waste Company, Bessemer City, N. C. The plant will continue its manufacture of coarse yarns.

The Collins and Aikman Corporation, Roxboro, N. C., plans a 200-foot addition to its pile fabric manufacturing plant.

The Highland Cotton Mills, High Point, N. C., will construct forty new houses to accommodate the increasing number of people employed in the mill.

The Cannon Manufacturing Company, Kannapolis, N. C., has let contract to the Combustion Engineering Corp., 200 Madison Ave., New York City, for a steam generating unit consisting of a 1,400 horse power boiler.

Katterman & Mitchell Company, Stanley, N. C., plan to install more looms until the available space is occupied.

A charter has been granted to the A. M. Johnson Rayon Mills, Inc., Burlington, N. C., to sell and deal in spun fabrics, yarns and threads.

The Carolina Bag and Bagging Company, will construct a plant at Columbia, S. C., for reclaiming waste material from cotton mills and for the manufacture of jute bagging.

The steel work has been started on the extension to the weave shed at the Chesnee Mills, Chesnee, S. C. When completed this extension will house 550 looms.

The Pacific Mills, Lyman, S. C., has opened up a new department for making up curtains to be used in homes.

The Whitmire plant of the Aragon-Baldwin Cotton Mills, Inc., Whitmire, S. C., which recently awarded a contract for the erection of a three-story addition, the grading has been completed and work will start on the building immediately.

A textile fabricating company will be opened in Greenville, S. C., by St. Johns Company, New York, N. Y. The company will install fifty power sewing machines.

New looms are being installed in the Gaffney Manufacturing Co., Gaffney, S. C., at the rate of 250 looms per month. Of these looms, 450 will replace looms that are being scrapped.

Through the office of Lockwood Greene Engineers, Inc., New York general construction contract for their client, P. Shapiro & Son, New York, has been let to Pyle Bros., Kingsport, Tenn., for a complete new preparatory and silk weaving mill for the Kingsport Silk Mills, Kingsport, Tenn. The building is to be one-story, brick and timber, with double monitor roof construction.

The directors of the DuPont Rayon Company, Inc., Old Hickory, Tenn., have authorized the construction of 220 new houses for the employees of the mill.

The Cherokee Spinning Company, Knoxville, Tenn., has installed group insurance for the employees of the mill. Contract for this insurance was made with the Metropolitan Insurance Company, New York City.

New England Mill Situation.

November 15th, 1928.

NEW ENGLAND mills have been showing further improvement since the Fall retail trade has become active. Needs for merchandise of many kinds have led to larger shipments and to the placing of much more business on goods to be made. Production has been increasing steadily and is still tending upward. The New Bedford mills are operating fully as well as they were before the strike began last April but they are very much in need of business in volume before anything approximating capacity output prevails. One estimate made recently was that that center was turning out about 65 per cent of the merchandise it could produce if it had business in hand.

Recovery of moral in the city's manufacturing plants has been decidedly slow. Where manufacturers have attempted to put into operation the so-called specialization plan involving changes in operative's methods, resistance has been so positive that only a very limited success has been attained in a few factories. The notion that workers would be glad of an opportunity to cooperate heartily in trying out new methods that would ultimately increase their wages has been exploded. A few mills have been able to make a little progress in reducing their costs by changing manufacturing methods but the gains have been so small that manufacturers have little hope of establishing the proposed new plan for many months to come.

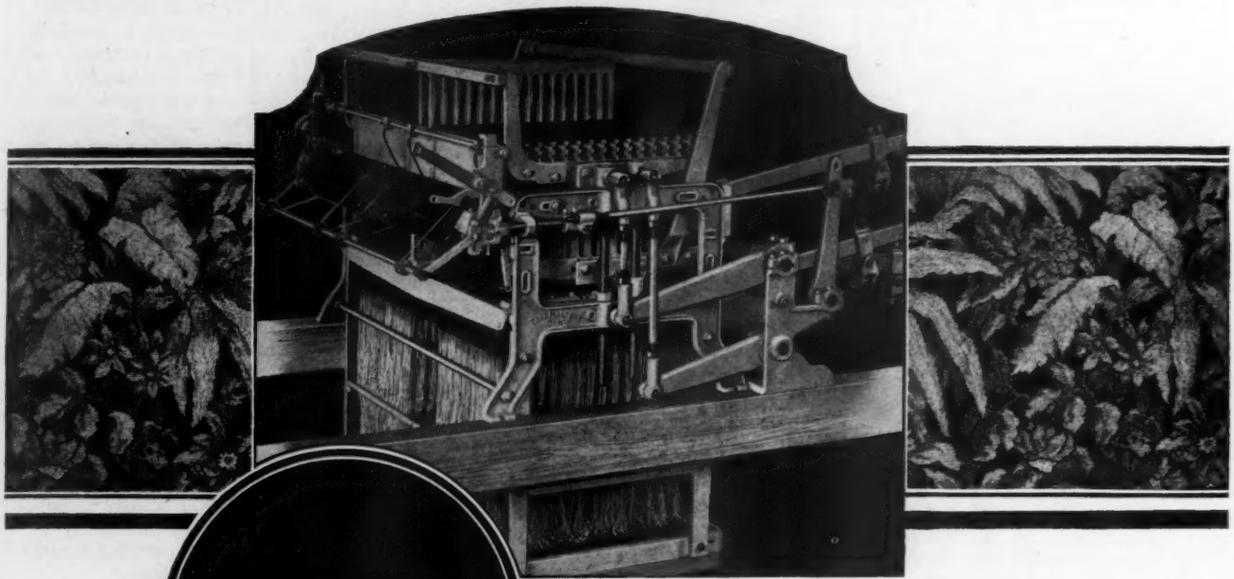
Another manifestation of the state of mind among operatives was seen in the great overturning of votes in the recent political campaign. In the city of New Bedford that went 11,000 for Coolidge in 1924 a majority of 4,300 was returned for Smith. In the nearby city of Fall River where resentment toward employers' political interests was quite as marked as in New Bedford a similar manifestation of a huge plurality for Smith was given compared with a very strong vote for Coolidge four years ago. There are some manufacturers who believe that if the mills are generally active when Spring comes along a demand will be made upon them by the labor unions for a restoration of the five per cent in wages that formed the basis of the compromise at the end of a twenty-five week strike.

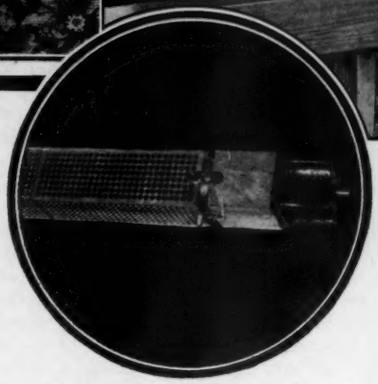
The reduction of production of fine goods in the country was in excess of 50 per cent up to October 1st for this year. Up to the present time there has been no indication that this lessened output has increased the demand. On the contrary several instances are cited to show that prices are actually lower on some rayon fancies, silk and cotton goods, and some of the all-combed cotton goods than they were in April of this year. There is a general expectation, however, that in the next few weeks converters will begin to buy goods more freely to supplement the deliveries going to them on past orders.

The situation in fine goods mills in New England outside of New Bedford now clearly demonstrates that they were able to secure considerable business that would not have gone to them had the New Bedford strike been settled earlier. Some of the Fall River fine goods mills are still running on orders written several weeks ago and this is likewise true of some of the fine goods mills in Rhode Island and Connecticut. For a time New Bedford manufacturers refrained from accepting tenders of business under current quotations.

But a few of the manufacturers finally began to accept contracts at prices that had a demoralizing effect on such goods as silk and cottons, plain rayons, and some of the more staple grades of fine shirtings. Competition is wide open despite all that has been done by some large mills to maintain prices and to decline business due them but tendred on low bids. Considerable business has been accepted on rayon and Celanese fabrics on curtain materials and on some of the higher grades of fine shirtings usually made in the New Bedford mills.

More all-rayon products in plain weaves are being made than a year ago, notably such cloths as rayon georgettes and fine all-Celanese in plain weaves for printing and moire





Detail, showing end of mahogany cylinder. The cylinders are built up in sections and are partially hollow, thus obtaining a minimum of weight and possibility of shrinkage or warping.

Upholstery Mills Throughout the Country Use HALTON'S JACQUARDS

THE 2608 Double Lift, Single Cylinder Halton Jacquard is owned by nearly every upholstery mill in the United States, as well as by numerous silk mills.

The cylinders are either five sided one piece or four sided two piece solid mahogany. Fewer parts make this machine simple in construction and especially durable in long operation.

The 2608, as well as the 1304 is used not only for upholstery, as pictured above, but also for weaving designs in silk and cotton.

Every Halton Jacquard is manufactured to render superior performance and to allow intricacy of design. Wherever COTTON, WOOL, or SILK manufacturers desire the best in Jacquards, they turn to Thomas Halton's Sons. Past performance guarantees future satisfaction.

Some of the upholstery Mills where Halton Jacquards are giving satisfaction in performance and durability.

Stead and Miller Company.

The Orinoko Mills.

Moss Rose Manufacturing Company.

Morrell Mills, Inc.

Crafted Mills, Inc.

La France Textile Industries.

THOMAS HALTON'S SONS

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Charlotte, N. C.

• A HALTON JACQUARD FOR EVERY DESIGN AND PURPOSE •

Ferguson Heads Eclipse in Re-organization

Majority interest in the Eclipse Machine Company, Elmira, N. Y., has been purchased by the Bendix Corporation of Chicago from General Motors Corporation. The present management will be continued, and the following officers have been elected: John C. Ferguson, president; William L. McGrath, vice-president, William C. Warner, secretary-treasurer. Mr. Ferguson has been with the concern since 1894.

The Eclipse company has two plants, one manufacturing the Bendix drive and other automotive devices. A subsidiary is the Eclipse Textile Devices, Inc., manufacturers of various equipment for the textile trade, in which Mr. Ferguson is well known.

treatment. Some mills have taken substantial orders on silk and cottons but it is claimed that much of this business was booked for the purpose of restoring operations in large plants that had been idle for a long time.

While production in Fall River mills has been gaining steadily in the past few weeks due to substantial sales of sateens, thin constructions of print cloth yarn goods, broadcloths, and specialties, the situation there is still greatly depressed. The dividend statement for the fourth quarter of the year issued a few days ago showed that the average amount paid in dividends was .577 per cent comparing with .61 per cent for the preceding quarter. On a capital of $38,910,000 only 224,850 was paid and only nine of 32 corporations capitalized at $14,225,000 paid any dividends at all and their payments averaged about 1.4 per cent.

Several mills are entirely closed, including the Chase, Arkwright, a large part of the Granite, the Osborn, Stafford, roy, and Weetamoe. The city is alive with discussion of the Loring merger which has thus far amounted to very little more than preparations to conserve a creditor's interest in bank loans due from the mills. The extent of the crippled condition of manufacturing in this city is only now beginning to be realized fully and while there are many mills that will continue in operation successfully for years to come there are others, and not less than a million and a half spindles in capacity, that will not function again as live concerns in cotton goods.

What is true of Fall River is similarly true of Lowell and several other Massachusetts cities and to a large extent some centers in New Hampshire and Maine. There is little prospect that either the Great Falls Manufacturing Co. of Somersworth, N. H. or the York Manufacturing Co. of Maine will become active again as cotton manufacturing plants. The Massachusetts Mill of Lowell that was bought by the Pepperell Manufacturing Co. has been dismantled and part of the machinery moved to Biddeford where the Pepperell is now making ready to produce cotton and wool blankets and many of the colored lines that were formerly made in the Massachusetts city.

Turning aside from the depressing features of the New England cotton mill situation there are several bright spots. Never before in the history of printing have so many of the large plants been so fully engaged as at present. The job finishing printing plants are engaged to an average of 91 per cent capacity with many plants running overtime while the large corporation plants like the American Printing Co. and Algonquin at Fall River, the Pacific at Lawrence, the Arnold at North Adams, and the Windsor Print Works at Adams, Mass., are running to capacity with some departments operating overtime.

Wide sheeting plants, sheet and pillow case factories, such as the Naumkeag at Salem, Mass., and the Pepperell at Biddeford, Me., are operating at nearly 70 per cent capacity with orders in hand to keep them occupied on the curtailed schedule of wide sheeting mills throughout the country for at least three months to come. The bleacheries are not so well occupied and very few of them are averaging more than 60 per cent.

There has been a remarkable improvement in the demand for the high quality product of New England bedspread mills, notably such large concerns as the Monadnock in New Hampshire, the Monument at Housatonic, Mass., the Stevens at Fall River, Mass., and the Manville-Jenckes Co. in Rhode Island. In addition there are many wide looms in mills scattered throughout the section that are busily engaged on fine rayon and cotton draperies and other novelties for home decoration.

Rhode Island and Connecticut mills are operating more fully than the mills in Massachusetts. Several of them engaged on fine goods have business on hand to keep them occupied well into mid-winter if no further business comes along. The Lonsdale Co. in Rhode Island, the B. B. & R. Knight Mill, the Grosvenordale, Ponemah, Baltic, and Lawton of Connecticut are all comfortably occupied. With the prospect that fine madras shirtings and cotton dress goods will sell better during the coming year than for a year or two past the outlook for these plants is considered bright.

Indications at present point toward a fair volume of cotton consumption in New England for this crop year but nothing is in sight to show that manufacturers are disposed to buy ahead very freely. While the outlook is brighter at the moment than it has been for more than a year there is a feeling in this section that overproduction is already under way and unless it is checked before the Spring months prices cannot be maintained on a profitable level.

The attitude of financiers in this section toward cotton mill investments has changed since three years ago when there was a general withdrawal of support to old established plants. A great deal of New England money is going into southern cotton mill investments, in the opinion of financiers who are keeping track of the trend of buying. This applies to mill shares rather than to the known increase in investments in new properties. The shrewder men feel that while competition between mills in the South may lessen individual earnings, the section as a whole is destined to become the great American center of cotton production and it will remain so unless the same forces of restrictive legislation, labor domination, and high taxation that have crippled New England become general there.

Merchandising problems continue to hold a prominent place in all planning for further cotton mill operations in the New England district. These problems are being given intensive study not only on the part of the manufacturers and merchants but by schools and classes in the universities and by economists who have been secured to undertake careful investigations of distributing difficulties affecting the profitable sale of textile products.

Automatic Oiling Device for Chain Drives

THE problem of lubrication on high speed chain drives on spinning frames and twisters have always been a great one. Burns & Tripp, Durham, N. C., have developed what is known as an automatic chain belt lubricator for solving this difficulty. They point out that when grease is applied to the chains at intervals, the centrifugal force of the chain in operation throws off the small particles, leaving the more solid matter to become mixed with dust. This, it is explained, sets up corrosion resulting in a dry contact of the different parts, and, in some cases, causing premature replacement of the chains due to this corrosion rather than defects in the chain itself.

The Burns & Tripp lubricator is designed to place a stream of lubrication oil between the top and bottom stretch of the inside of the chain continuously, passing through the chain by centrifugal force. This, it is pointed out, insures the desired lubrication of the pins, sleeves, and all close fitting joints of the chain. Oil may be used repeatedly, when changed about every six months, it is advised.

Unfamiliar Languages BUT *One familiar Word:—*

TEXACO

SAIL down the China Sea from Hong Kong to the shores of India—Across to South Africa—back to the Antipodes —over the length and breadth of the Eastern Hemisphere.

Wherever you go, the Red Star with the Green "T" bearing the name TEXACO —awaits you.

Texaco petroleum products lubricate great industries in Europe — keep wheels of transport and machinery of agriculture turning freely in far off China, India, Australia, Africa and New Zealand—And TEXACO Gasoline and Golden Motor Oils are accepted by motorists as the Standard of quality everywhere.

So go where you will throughout these countries of unfamiliar languages—one familiar word will greet you—TEXACO —and the TEXACO Star—symbol of quality in petroleum products.

There is a TEXACO Lubricant for Every Purpose

THE TEXAS COMPANY

Texaco Petroleum Products

Dept. CD, 17 Battery Place, New York City

OFFICES IN PRINCIPAL CITIES

COTTON COMMENT

By H. & B. Beer--

(New Orleans, November 17th, 1928

DURING the period under review the cotton market bulged sharply at times, but hedge selling, realizing and December liquidation caused values to ease off again. Nevertheless, prices are about $2 per bale higher than one month ago.

Returns to the government, as of November 1st, indicated a crop of lint cotton of 14,133,000 bales versus 13,993,000 as of October 1st, but ginnings to that date, November 1st, were less than generally expected—10,161,000 bales against 9,921,000 to corresponding date last year when the crop was 12,955,000 bales, making it necessary for ginnings after November 1st to be 3,972,000 bales against 3,034,000 ginned after November 1st of last season to equal the official forecast.

Acting on the theory that the crop may have been overestimated, especially since there were freezing temperatures in Oklahoma and Northwest Texas, and much frost in the central and eastern belts since November 1st, the market bulged sharply after the November 8th government crop forecast and Census ginning reports were released, but, as previously stated, hedging and realizing weighed on the market thereafter, causing values to work lower again in the face of favorable trade developments.

ASSOCIATION OF COTTON TEXTILE MERCHANTS REPORT

Yards—October—	This season	Last season
Production	284,899,000	331,854,000
Sales	401,953,000	225,560,000
Shipments	307,402,000	293,411,000
Stocks	394,742,000	257,011,000
Unfilled orders	492,556,000	432,447,000

BRITISH BOARD OF TRADE REPORT FOR OCTOBER

	This year	Last year
Exports of yarn, pounds	15,000,000	15,000,000
Exports of cloth, yards	334,000,000	312,000,000

Census returns for the month of October showed a rapid increase in domestic consumption of lint cotton, being the largest on record for October—619,000 bales against 492,000 for September this year and the previous record for October of 614,000 bales last year.

CENSUS REPORT—LINTERS INCLUDED

United States—Bales—	This season	Last season
Consumption, October	695,000	689,000
Consumption, 3 months	1,851,000	2,108,000
Mill stocks, October 31st	1,195,000	1,324,000
Stocks, public storage	4,636,000	5,419,000

WORLD'S INDICATED SUPPLY OF AMERICAN LINT COTTON

Bales—	This season	Last season
World's carryover, August 1st	5,078,000	7,012,000
Indicated crop, lint	14,133,000	12,955,000
Indicated supply for season	19,211,000	19,967,000
Average price of Middling, belt	(†)	19.72

OTHER STATISTICS

November 16—Bales—	This season	Last season
In sight, marketed	8,044,000	8,092,000
Exports from United States	3,038,000	2,767,000
Spinners takings, world	4,853,000	5,163,000
World's visible of American	5,539,000	6,378,000
Of other kinds	1,673,000	1,170,000
Of all kinds	7,212,000	7,548,000
Middling today, New Orleans	18.76	19.58

Sales of spot cotton thus far this season, to November 16th, at reporting American markets, total 3,777,000 bales compared with 3,186,000 to corresponding date last season, with indications, because of the lower price and much lower basis than at this time last year, of continuing good.

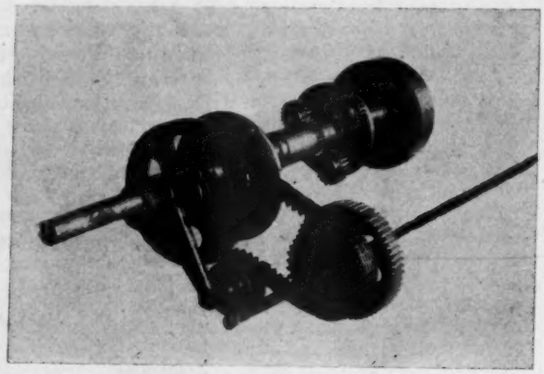
For the same reasons and want of raw cotton abroad, exports from the United States promise to continue free, and it follows that spinners takings by the world will likely continue to increase, perhaps at a larger rate than after this time last season, as the textile trade is reported good in France and Italy, improving in England, Japan and on the Continent, and appears to be improving rapidly in the United States, as noted by the big increase in domestic consumption in October compared with September.

Having already marketed 8,000,000 bales of this year's crop, the South is in a position, because of the fairly good prices obtained, to market the remainder of the crop judiciously. Early ginnings, as noted by the large spot sales in the South to date, were evidently nearly sold as fast as ginned, which is also reflected in the large amount marketed thus far. Of late the movement to market has been of smaller proportions, except that for the past week the insight was somewhat larger than for corresponding period last year.

New Compound Gear for Roving Frames

The Precision Gear and Machine Company, Inc., Gastonia, N. C., announce the manufacture of a new compound gear with a chain drive for roving frames. This compound gear is so constructed that the beveled gears are eliminated altogether, which the company claims reduces the power required by at least ten per cent.

On the end of the main drive shaft a shell is mounted with teeth cut on the inside face. There is a flat plate



with three gears mounted on it that fits into the shell with the teeth on the small gears meshing with the teeth on the inside of the shell that is mounted on the main shaft. There is a gear mounted on a collar that receives its motion from the three small gears; this in turn drives a wheel which is also mounted on the collar. This large gear acts the same as the outside diameter of the sun wheel did in the usual compound. There is a chain driving from the outside diameter over an idler to a gear which drives the builder motions. The idler keeps the chain taut at all times. The company states that this compound requires oiling only four times a year.

Draper Announces Plant at Spartanburg.

Draper Corporation have announced that they have acquired a large tract of land adjacent to the Saxon Mills, Spartanburg, S. C., and have engaged J. E. Sirrine & Co., engineers, Greenville, S. C., to prepare plans for a distributing plant, to include a large two-story mill building, several houses for officials and houses for a small village.

The decision to establish this plant in addition to the supply depot at Atlanta, Ga., was made after careful survey and in the desire to give the mills in South Carolina and points north the best service possible. Details of buildings and the operation of the plant are not completed.

You wouldn't DRESS *like this today!*

BUT—

STRANGE as it may seem, some men who would never think of wearing clothes such as were popular in the day of the "one-hoss shay" still countenance the use of certain equally antiquated equipment in their mills!

How can a mill progress with moistening equipment installed in the "Gay Nineties" when even the complicated humidity controls, new only 15 years ago, are now long out of date?

A mill without proper humidity control cheats itself on regain and loses hours of time in tying up end-breaks (frequently caused by "static" induced when the air is dry), starting up frames and similar wasteful operations.

THIS newly designed Amco Humidity Control automatically regulates and controls humidity in Textile and other mills without using wet or dry bulb actuated devices.

Modern humidifying equipment with the new simplified Amco Humidity Control remedies these conditions. It is not an expense but a sound investment which soon returns the initial cost through the savings effected. Hence it will pay you to learn the true facts about humidity conditions in your own mill. Call for an Amco "Air Doctor" today and get his written diagnosis. We render this service without charge and without obligating you.

AMERICAN MOISTENING CO.

Humidifying Devices

Air Doctors Since 1888

EXECUTIVE OFFICES
261 West Exchange Street,
Providence, R. I.

SALES OFFICES
Boston, Mass. Atlanta, Ga.
Charlotte, N. C. Greenville, S. C.

Signal Device for Beam Twisters

FOR many years that portion of the textile industry connected with the manufacture of ply yarns has been faced with the difficulty of eliminating odd ply in the manufacture of twisted yarns. This has required close supervision by the operative, and subsequent inspection in later processes.

With this in mind, the Matthews Machine Company, Inc., Charlotte, N. C., began experiments several years ago for the purpose of developing a signal system for twisters which would automatically care for these difficulties. The system has been perfected, and after two years of actual tests, in which the equipment was operated day and night, 120 hours per week, all the difficulties encountered were gradually overcome by the design and refinement of the different units of the system.

Rising perpendicularly from each beam twister is a light hollow post on which are mounted four small electric bulbs—one bulb to each side of a warper beam on the frame. Each bulb is connected to a narrow plate placed lengthwise of the frame, just above the guide roll. Near the top edge of this plate are mounted small drop wires, one for each warp end on that side of the beam. Each frame in the section is connected by wire to a horn similar to that used in the Auto Call system. This horn is fastened to the ceiling in a centrally located position.

When a single end breaks the drop wire through which it was threaded drops and makes contact with the lower edge of the light plate. The electric bulb connected to that plate is at once lighted. Simultaneously the horn sounds a short repeated signal note, notifying the operative that an end has broken somewhere in his section. He glances up at the light and it tells him immediately which side of the warper beam has the break.

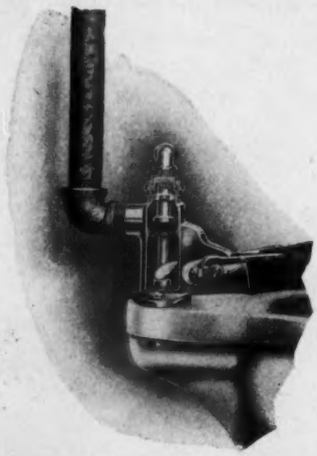
The company states that this device will save labor, will eliminate odd plys and guarantees to the mill uniformly perfect fabric. It is also stated that where formerly one hand cared for seven frames he is now able to care for thirty-two frames. The number of inspectors required in the elimination of yarn counters and finished goods inspectors is also reduced, it is explained.

The Martha Mills, at Thomaston, Ga., one of the large tire fabric mills of the South, was among the first to adopt this system for the elimination of odd plys and twisted yarns in their twister department. The plants of the Thomaston Cotton Mills, at Thomaston, also are equipped with the device, and it has been installed in a number of other mills.

It was at these plants where the experimental work on the device was carried out over an extended period of years before it was placed on the market.

New Vogel No. 10 Water Closet

Joseph A. Vogel Co., Wilmington, Del., have developed their new No. 10 water closet, which has a number of interesting features. Simplicity and durability were main considerations in its design. The bowl is of vitreous china, and the operating lever and flange are of heavy bronze. When the seat is depressed, the supply valve packing is drawn down from the top supply valve seat, and the flush valve packing is brought into contact with the flush valve seat, allowing water to enter the tank through the flush pipe. When the pressure of water and air in the tank becomes equalized with the service pressure, no more water enters the fixture. When the seat is relased, the rod carrying both the supply and flush valve packing is forced upward, closing the water supply at the inverted supply valve seat in the swivel at the top; the flush valve opening by the same movement. All water drains out of the flush valve body, to prevent damage by excessively low temperatures during shut-downs, it is pointed out.



The Matthews Signal System for the Elimination of Odd Plys in Twisted Yarns. Signal Lamps are Mounted in the Center of Each Frame, and When an End Breaks a Light Flashes Indicating to the Operative the Location. At the Same Time a Horn Sounds Drawing Attention to the Light.

There's extra service in Rockweave canvas products

They were originally designed for the special needs of the textile industry . . . the hardest service there is. From the start, there's been a big demand for them in other industries as well. As a result, Rockweave canvas baskets, trucks and hampers now form a complete line, built for every need.

They are made of materials which have proved the best for the particular service specified. Their covering, Triumph Duck, is made in our own mills. It is tougher, harder wearing. Frames are of specially tempered spring steel. Top rims are bound with chrome leather. Casters, handles, hinges, eyelets, shoes and truck boards are all of special design and selected materials. For light weight, and long wear, they are in a class by themselves. And, like all Rockweave products, our manufacturing facilities enable us to price them right in line with the market.

All standard sizes of baskets, trucks and hampers are carried in stock, ready for immediate shipment. Special sizes to meet your requirements will be made and shipped promptly, at reasonable prices. Our representative can supply full information, and take your order. Or you can write direct.

Rockweave Mills

CANVAS PRODUCTS DIVISION
DIVISION CALLAWAY MILLS

LaGrange, Georgia

Canadian Sales Representative
J. BURNS
51 Kensington Ave., S., Hamilton, Ontario

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

E. M. Terryberry has returned to his former position with Howard Brothers Manufacturing Company, Worcester, Mass., as general sales agent, and will again handle card clothing and other lines in Virginia, North Carolina and South Carolina.

W. H. Randolph, Jr., is in charge of a new district office which has been opened in the Fourth National Bank Building, Atlanta, Georgia, by A. E. Staley Mfg. Co., of Decatur, Ill. For several years, Mr. Randolph has represented the company in the New York office. The new office in Atlanta will have supervision of the southeastern territory, with the same personnel in the territory, including George Rankin, who will travel for the company in Georgia, Alabama and Louisiana, succeeding J. W. Pope.

Henry E. Fisher, who for ten years had been treasurer of the Contoocook Mills, and whose business life has been identified with the textile industry, died recently. Mr. Fisher was a native of Newmarket, N. H., and was in his seventy-ninth year. At one time he was connected with mills at Lawrence and Atlanta, Ga., in which latter city the Fisher family once resided.

Charles B. Ordway has become associated with the technical staff of Federal Phosphorus Company, Birmingham, Ala. Mr. Ordway has in the past been connected with the dyestuffs department of the E. I. du Pont De Nemours Company, Inc., General Dyestuff Company and other firms, and has also held positions in some leading southern mills. He is an occasional contributor to the columns of COTTON. He will assist in the development of sales of the textile line which the Federal Phosphorus Company has recently announced.

W. H. Randolph

E. M. Terryberry

R. E. Barnwell has been promoted to vice-president of Lockwood, Greene, Engineers, Inc. Mr. Barnwell will remain director in the South with headquarters in Spartanburg.

L. C. Smith, who for the past several years has been assistant superintendent of the Shawmut Mill, Shawmut, Ala., has been made agent of the Columbia Mills Co., division of the Mount Vernon Woodberry Co., Columbia, S. C.

J. B. Jones has succeeded Mr. Smith as assistant superintendent of the Shawmut Mill, Shawmut, Ala. Mr. Jones was formerly production manager of the Shawmut mill.

Joe Lanier has been made production manager of the Shawmut Mill, Shawmut, Ala. Mr. Lanier was formerly connected with the Lanett Mill, Lanett, Ala.

J. Colby Lewis has resigned as superintendent of the Pemaquid Mills, New Bedford, Mass., to become assistant director of manufacturing with the United Merchants and Manufacturers, Incorporated, of which Fred W. Thomas is director.

John E. Lonergan, president of H. Brinton Co., Philadelphia, Pa., died on October 22nd.

Lewis H. Beck has become general superintendent of the Rountree Cotton Mills, Meridian, Mass., which also operates a plant at Magnolia, Miss. Mr. Beck was, until recently, president and general manager of the Montala Manufacturing Co., Montgomery, Ala., and Autuga Mills, Prattville, Ala. Prior to this time, he held positions with other prominent southern mills.

George Fish has been appointed treasurer and general manager of the Lowell Cotton Mills Nos. 1 and 2 at Lowell, N. C., and No. 3 at Dallas, N. C., and Avon Mills, Gastonia, N. C. Mr. Fish, during the past ten years, was associated with Col. Leroy Springs as general manager of the Fort Mill Manufacturing Co., Fort Mill, S. C.

V. D. Le Portier, formerly connected with the Maginnis Cotton Mills, New Orleans, La., as overseer of dyeing, is now in charge of the dyeing at the C. R. Miller Manufacturing Co., Waco, Texas.

Emil F. Clause is now overseer of weaving with the Blackstone Manufacturing Co., Blackstone, Mass.

L. M. Saxon, formerly with the Perkins Hosiery Mills, Columbus, Ga., is now night overseer of carding at the Werthan-Morgan-Hamilton Bag Co., Nashville, Tenn.

S. P. V. Desmond is now associated with S. B. Alexander, southern representative of the Crompton & Knowles Loom Works. Mr. Desmond was formerly connected with the Carolina Specialty Company.

Louis L. Okey has joined the selling forces of the National Oil Products Company, Harrison, N. J. He has been assigned to the southern territory. Mr. Okey was formerly connected with L. Sonneborn Co., New York City.

T. J. Reynolds, formerly of Opelika, Ala., and Manchester, Ga., is now with the Brookside Mills, Knoxville, Tenn.

O. B. Ayers, formerly of Greenwood, S. C., has accepted the position of overseer of spinning at the Fort Mill Manufacturing Co., Fort Mill, S. C.

P. B. Martin, formerly overseer of the cloth room at the Erlanger Cotton Mills, Lexington, N. C., has been promoted to designer.

John Egbert has tendered his resignation as superintendent of the Grimes Fabric Co., Lexington, N. C.

A. P. McAbee, who held the position of overseer of weaving Nos. 1 and 4 mills, has been promoted to the position of general overseer of weaving at the Brookside Mills, Knoxville, Tenn.

Howard Revell has been appointed superintendent of the Piedmont Plant Works, Taylors, S. C.

J. M. Bolt, formerly second hand in the weave room at the Fort Mill Manufacturing Co., Fort Mill, S. C., has been promoted to overseer of weaving.

W. O. Lester, formerly of Greenville, S. C., has accepted the position of overseer of the cloth room at the Clinton Cotton Mills, Clinton, S. C.

Spencer Turner, vice-president of the Chadwick-Hoskins Company, Charlotte, N. C., and head of the selling house bearing his name, died on October 18th at his home in New York City.

C. H. Hammond has accepted the position of overseer of carding at the Aragon-Baldwin Cotton Mills, Inc., Rock Hill, S. C.

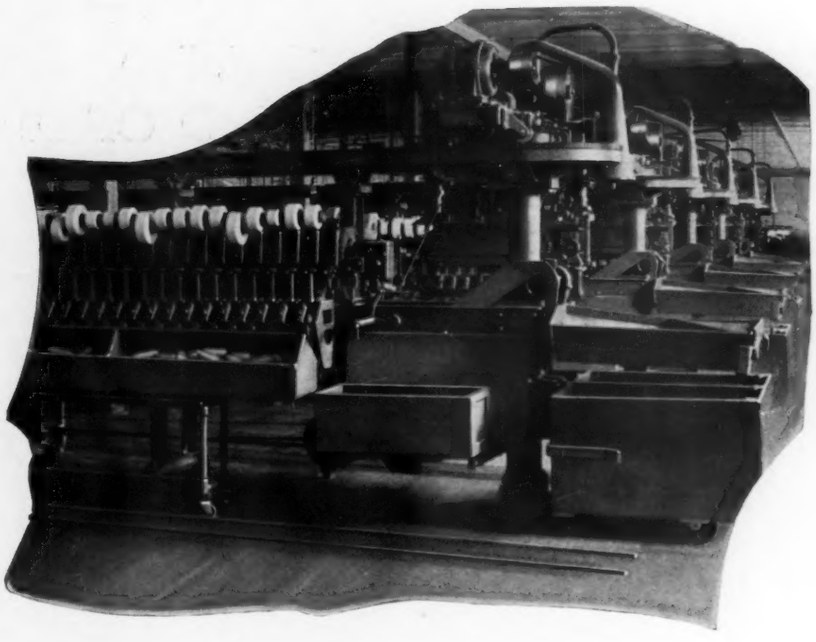
George F. Becknell has accepted the position of assistant manager of the Ellenboro Manufacturing Company, Ellenboro, N. C. Mr. Becknell has held the position of superintendent of the Marsh Cotton Mills, Salisbury, N. C., which position he resigned to accept the one at Ellenboro.

A. J. Fitch, works manager of the Cumberland plant of the Celanese Corporation of America, was elected a director at the last meeting of the board. Mr. Fitch has been with the Celanese Corporation for many years.

"Acme Ball Bearing Spindle."

Acme Ball Bearing Spindle, is the name of a booklet recently published by the Acme Ball Bearing Spindle Corporation, Franklin, N. H. In this booklet there is given a brief history of the Acme ball bearing spindle and a complete description, with illustrations, of this spindle. Frictional losses in textile machinery is discussed along with textile power costs.

"EVERY KNOT A WEAVER'S KNOT"



RELATION BETWEEN SPEED AND TENSION IN SPOOLING AND WARPING

High Speed does *not* mean High Tension

IN ordinary spooling and warping systems, yarn tension increases as the winding speed is increased. Many practical mill men have found that a reduction in spooling and warping speeds would cause the weaving to run better and therefore it is sometimes assumed that high speeds and high tensions go along together.

We have introduced a *new* principle in yarn winding by means of which very high speeds are obtained but with very low tension. Our Automatic Spooler winds at a rate of 1,200 yards per minute, our High Speed Warper 500 to 600 yards per minute, but the tension in the running threads is only *one-half* as compared with the ordinary method.

Think This Over!

BARBER-COLMAN COMPANY

General Offices and Plant

ROCKFORD, ILL., U. S. A.

FRAMINGHAM, MASS. GREENVILLE, S. C.

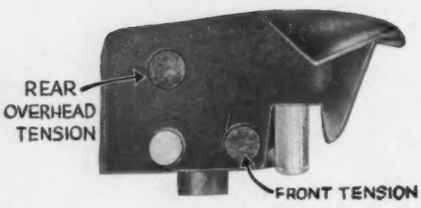
U S AUTOMATICS WILL HANDLE ANY KIND OF FILLING

THE present line of U S Automatic Shuttles is the result of years of constant effort to perfect a series of eyes that will take care of all types of filling. Every detail for improvement suggested by weavers on various kinds of filling has been incorporated in the latest models "E," "F," and "G" eyes. These eyes will run any count of cotton, wool, worsted, jute, silk, or rayon, equally well. "A," "D," Right Hand, Opposite Wind, Double Wind, and other styles of eyes are also available from which to choose.

In this series, there is an eye which, if given a fair trial in a comparative test, will decrease your seconds and increase your production of better quality cloth.

A few of the patented flexible tension features of U S Eyes are described herewith, as even better results may be obtained in the appearance and finish of your cloth if you take advantage of their possibilities.

Send for our new folder which explains in detail the many tension combinations you can obtain in U S Automatics, and also shows a quick, easy method of inserting woven felt tensions.



This shows a 1-1 tension, punched felts, inserted in both the front tension and the rear overhead tension holes. This combination is standard for the ordinary run of cotton, rayon, or silk filling.

Note the porcelain center post. Porcelain posts are preferred by some mills on some grades of silk or wiry worsted filling.

The 2-2 tension (woven felts front and rear), illustrated at the left, is the heaviest tension obtained in U S Automatic eyes. It is especially recommended for use with worsted, crepe, or hard twisted filling, and gives good results on rayon.

The 3-4 tension (No. 6 wire pin front, No. 13 wire pin rear) is excellent for use where freedom from tension is desired on soft spun cotton or woolen yarns, or where filling is poor or tender.

U S Bobbin & Shuttle Co.

PROVIDENCE, R. I.

GREENVILLE, S. C. HIGH POINT, N. C. PHILADELPHIA, PA. ATLANTA, GA.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES

AN OLD TIMER SAYS

In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

"WHAT'S this board here for, Jim? It doesn't look like a cut board?"

"No, Old-Timer, it is not a cut board. It is a record of all the pieces of warps which are cut out and also a record of the full warps which are cut out for doubles and misdraws. By looking at this board from day to day, as I pass through, I can tell just how the tying-in machine men are doing their work, and also how many break-outs we are having to cut out warps for. It just keeps me in touch with what is going on, you know."

"Wait a minute, Jim, I want to see this big printed sign, too."

Rules For Battery Hands

"That's not a sign, Old-Timer. It's the printed rules for battery hands and we also have the same rules printed on a small folder, and when we employ a battery hand, we not only read these rules to him, but we give him a copy to put in his pocket. Then when we see that battery hand doing something wrong, or not taking advantage of every motion, we go to him and say, 'Let's see your copy of battery hand rules.' That gives a good opportunity to show him exactly why he should study the rules, and that by adopting them he will make more money. About once per month the second hand or overseer takes a half a day to do nothing but stand around and watch battery hands and talk about the rules to them. Here's a copy of the little folder you can put in your pocket if you like."

THIS article continues the report of "Old Timer's" visit with Jim, which has been appearing for several months. In this installment, we call particular attention to "Old-Timer's" advice about Little Things; and Jim's opinion on the multiple system. Next month Jim has to figure out the yarns, reeds, etc., necessary to make a new style of goods, and "Old Timer" gives him some simple calculations for that purpose. This installment will be particularly helpful. *The Editor.*

"Thanks, Jim. Those certainly are the best suggestions I have ever seen for battery hands." (For the benefit of readers, I am reproducing this folder on the next page. It folds to a size 3¼ x 5½ inches, which can be conveniently carried on the pocket.)

"Yes, Old-Timer, I worked on those rules several days before we had them printed. You will notice everything suggested to the battery hand has a reason given for it. Every rule shows the battery hand where he will gain something for himself if he will adopt it."

"What is that girl doing, Jim? She has passed us twice since we have been in the weave room."

"She's taking down a record of how long a loom stands when a warp runs out. She merely walks over the room every fifteen minutes and sets down the number of each loom standing with the warp out. If she passes a loom and records it stopped three times, we know it has stood 45 minutes from the time it was flagged for a warp out until it is making cloth again. It doesn't take long to find out who your best section men are, and also whether they are being supplied with warps or not, and whether they are having to haul them too far, and many other items that contribute to the loss of production when supplying a loom with a new warp."

"Well, how do you like the multiple loom system, anyway, Jim?"

Jim Uses The Multiple System

"It doesn't matter whether I like it or not, Old-Timer, because I have watched the system and my cost sheet long enough to convince me that there are very few weaving conditions or styles of goods that it will not apply to and that it is not only a big money-saver to the mill, but it is also best for the weaver. The trouble with the mills which haven't been successful with the system is they haven't done enough educational work with the weavers. Take a weaver who learns on the multiple system, and he invariably makes a success of it. It's the old weavers and overseers who do not make a success of it. We in the textile industry are just about forty years behind all other industries in the management of operatives, anyhow, Old-Timer. No building contractor would think of letting his high-priced brick-layers go after their own mortar; nor letting his high-priced carpenters lug the lumber up to where they are going to use it. Even the old-time farmer will not let his plow hands or hoe hands go to the house to get a drink of water—they have a cheap boy to bring the water to them. I can remember—and I am almost ashamed to say how few years ago—that it was customary to give each weaver a broom on Saturday about one hour before stopping time, so he could sweep up around his looms, and, as you know, the engineer had to throttle down his old engine to keep the darn thing from running

RULES FOR BATTERY HANDS

No. 1 If you fill your batteries correctly you will have less work to do and will make more money.

No. 2 The end of the filling is at the bottom of the bobbin. If you pinch the filling to get the end the loom will throw that bobbin out and you will have to put it in again. That is double work for you.

No. 3 When the end holders become full they will not hold the filling, causing loom to knock out bobbins. Keep them cleaned off and it will save you work.

No. 4 The less number motions you make the more batteries you can fill. If you will keep end holders clean you can simply lay each end of filling over the end holder until you have filled battery, then wind all the ends around the holder at one time. This will keep your arm from getting tired.

No. 5 Take the pieces of filling out of the can and put them in first, then finish filling battery with full bobbins out of your box. If you let pieces accumulate you will get behind with your work.

No. 6 If your batteries are empty do not put but 4 bobbins in each battery at a time. This will keep your batteries from turning until you have time to get around.

No. 7 Thread battery, placing thread one notch below straight line. This will prevent picker stick from breaking filling.

No. 8 You will be held responsible for getting filling damaged by letting it fall on the floor or for placing oily filling in battery which will ruin the cloth.

No. 9 If a loom is stopped where you are filling the battery be sure your box is not in the weaver's way. Go to another battery so the weaver can start up his loom. When the loom is is stopped the weaver's pay is stopped.

away because there was so much machinery stopped. One of the most important things to get your weavers to realize, Old-Timer, is that they *must* go over the backs of their warps; they must make the rounds in the back alleys to catch the things that will stop the loom, before they stop it."

"Is that so, Jim? Well, if that is a fact, it looks to me like there should be some inspecting done in the preparation of those warps while they are being made in order to reduce the number of things which will come up on the back of the loom; then the weaver will not find so much to do in his back alleys."

"That's true, Old-Timer, and that is of course what all well-managed mills strive for in making a success of the multiple loom system."

(Spooler kinks probably cause more loom stoppage than any other one thing in the average mill operating stop motion looms, and the reader is especially requested to refer to the "Old Timer" article which explained in detail a system to greatly reduce spooler knots on spoolers. This appeared in the July 1926 issue of COTTON.)

Watch The Little Things

"Details, details, details, Jim! It's the overseer who can inaugurate the best system or systems for looking after the details which will beat the other fellow in the long run. It takes one hundred cents to make a dollar, and you have got to get each one of those cents before you can have the dollar. It takes thousands of little things all put together to enable you to get more production than the other fellow.

"When you see a broken picker stick in the fixer's trash box, look it over to see if the loom had a bumper in it or not, if the bumper is worn too much the stick will strike the iron and wear a notch in the stick which will oftentimes cause the stick to split. If there is not a piece of leather in the end of the lay, the stick striking the iron lay end plate will wear a notch in the stick and often-times cause it to split.

"Make it an iron-clad rule that all fixers must use the right size wood screw in the hold-up straps. Many sticks are ruined with large size wood screws. Have all hold-up straps made by the same pattern, of the very best material, and be sure to put two nuts on the heel bolts so the parallel shoe will not work loose and ruin the picker stick. Do anything you possibly can to save a picker stick. A damaged picker stick will often cause two or three flags before it finally has to be taken out. The loom has lost probably fifteen minutes each time it was flagged. The stick finally breakes. The fixer can't always be ready to go to that particular loom when the stick breaks. He may be tying on a warp. He may have two or three other flags ahead of that one. On an average it may take him ten minutes to get to the loom where the stick is broken. Then he is doing pretty good work if he always puts in a

new stick, parallels the picker and gets the loom going in good shape in thirty minutes. If you are paying the fixer 40 cents per hour it has cost you 26 cents of his time and the loss of production of your loom to get that broken stick replaced. That is all very conservative. It really costs many mills at least 50 cents to replace a broken picker stick. And how much do your sticks cost, Jim?"

"I see what you are driving at, Old-Timer, and it doesn't matter what my sticks are costing, I am going to make an effort to get them to cost more, providing of course, I can get more value put into the stick by the manufacturer."

"That won't be any trouble Jim. See that fixer over there cutting the end off his new picker stick?"

"Sure I do. What of it?"

"Make the picker stick manufacturer do that. If he won't make them exactly like the sample you send him, refuse to accept them.

"I also noticed a fixer we passed down on the other end of the weave room with a half dozen new sticks which he had apparently just gotten from the supply room; he had a brace and bit boring out the heel bolt holes so he would have them all ready to put in when he had one to break."

"That's the way we train our fixers, Old-Timer. We teach them to fix up the picker sticks and other supplies before they have to put them in—"

"Wait a minute! When we passed that fixer working on the sticks I took particular pains to notice his section, and I saw one flag up for a loom out of fix and another loom standing for a warp out—"

"Oh, you just go to H—! You are always throwing cold water on everything I say—"

"Not at all! What I am trying to get you to see is, that you paid the picker stick manufacturer to do that work when you bought the stick. Of course the picker stick manufacturer is going to raise his price on you when you become so exacting in your purchases, but you can afford to pay it."

"Yes, I see I can, and I am sure going to look into this picker business."

"Not only picker sticks, Jim. I have merely been using picker sticks as an illustration, because it is so easy to follow my reasoning, but the same argument applies to all other supplies in a general way.

"I suppose you are furnishing all your fixers with lock washers, so every time they have a broken bolt, have to take out a crank shaft box, cam shaft or have a bolt of any kind out, they can put a lock washer on it—"

"Yes, we have been doing that ever since you told me about it two years ago."

"Now, be sure they leave off the flat iron washer. I noticed one of my men just putting the lock washer on top of the flat iron washer, and darned if I didn't have to take a crank shaft box, bolt and washer to prove to him that the lock washer was absolutely worthless if he left the flat washer on."

(At this point a boy from the office found Jim and Old-Timer, and handed Jim a note from the boss. After reading it Jim asked Old-Timer to go to the office with him, and at this point the next article in the January issue will take up the story again. Superintendents and overseers alike will be vitally interested in what Old-Timer has to tell Jim next month about calculations for reeds and harnesses, yarns, etc., to make a new style of goods.—The Editor.)

Boosting the Job.

EDITOR COTTON:

Following "Old Timer" in one of his recent articles on taking stock of yourself brings to mind many things that have happened in my life. For instance, praising a man when he deserves it, foreman or what not. We have no right to criticize a person for a mistake unless we also praise when praise is due. It is only right when a man does something that really means something that the foreman should be game enough and unselfish enough to tell him that he has done well, for the man knows his work well enough to know that he has accomplished something above the ordinary, and if he is not complimented on it he will begin to think, "What's the use? The more I do the more they think that I ought to do. They take it as a matter of course."

The younger generation, in this day, rules, and there is no getting around it; in styles, education and otherwise. The laws of today require the children to attend school so many days or months during the year until they reach a certain age, and in the schools they are taught sewing, trucking, sanitation and most anything that goes to make up a real man of the day, and through this they are teaching their parents. The parents are not really aware of how they are taking training from the kids, the mother about the household and the father about his duties as to his profession. The father and mother are often amused at the kids' ideas of the things that they have been going through life with, and the kids are teaching them better ways of doing these things.

This brings us to the point where a man should take stock and see just where he is. I am reminded of my own boy as he went through school; the things he would talk about and try to get me to do; when he got his first job with a cracker concern and how "sold" he was on his crackers. Why, he would say, "I'm with the best cracker concern in the states" and would go on to prove his remarks. And every time he would come home on a vacation he would go up to our little town, which was not in his territory, would go behind the counters and reshape the grocers' shelves and wipe off the dust that had accumulated on the little cartons of crackers in order to make them show up well.

After that he went with an oil concern as a road salesman, and became sold on this product just the same as he was on his crackers. I, myself, think that he is with about the best oil concern, but it's largely what I get from him. It's like "Old Timer" states, it's being sold on the thing, the product or the company, or the boss to whom you owe your opportunity. Praise your boss, your company and your products, and the boss can see what he bought you for. We are sold for some price, and the better we sell ourselves the more we can get out of it and the longer we are employed.

I'm like "Old Timer," but of course others may not think the same. Anyway there is not so much to a fellow being lucky. It is selling one's self in the best way, and that way is to work, and put your job at the top of the ladder.

T. A. D. (Ga.)

The Greater Wastes

The Greater Wastes are the wastes of *mind,* not of matter — wastes of mental energy rather than in material things. Fear, doubt, uncertainty, indecision, procrastination are the unlicensed robbers in every mental territory. But the greatest mental waster of them all is *worry*.

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Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Wants Method to Figure Weaving Production

EDITOR COTTON:

We would like to see some discussion in the "How OTHER MEN MANAGE" department of COTTON as to how the average production of a weave room should be figured in the plant where several different styles of goods are being produced regularly on several different speed looms, etc. We would like to have the methods used by other mills in figuring this production. Do they take the theoretical production of each loom and the actual production, adding the two and divide the actual by the theoretical to get the average for the entire room, or just how do they figure the average for the total room when they have different speeds and different pick goods producing different percentages for the week?

CONTRIBUTOR No. 4085.

Some Good Thoughts on Card Drafts.

EDITOR COTTON:

I recently received a letter from a mill friend of mine in connection with card drafts, in which he submitted to me a problem he was having, and thinking that this might be of interest to the readers of "How Other Men Manage", I am passing along herewith his question, together with my answer to his problem.

He told me that they had been using a 50-pound lap on their cards, with a draft of about 90, to make a 60-grain sliver, and that they had changed to a 60-pound lap, with a draft of about 110, to get the same production. He said that after the change the sliver appeared to have more neps in it, and wanted to know why—since he had always thought that "the higher the card draft the better the product". I replied to him as follows:

"There has been such a wide diversity of opinion with regard to draft, heavy and light laps on cards, etc., that you will hardly find two mills using the same method. However, only recently our overseer of carding made a change on a few cards, and put the sliver from the different cards on a glass book-fold and brought them to me, without my knowing which was which. After a dozen or more tests, it developed that I picked out the sliver from the cards which had been changed similar to those in question.

"The frist question which arises as to the change made is: when you increase the picker lap from 50 to 60 pounds, what happens in the pickers? Is the lap as clean as it formerly was? Did it have the same number of beats per inch Was it as even in weight, yard for yard?

"My impression is that the picker lap was not as good at 60 pounds as it was at 50 pounds, and if it was not, then the work for the cards was materially increased without any other change being made.

"The proceedings of the Southern Textile Association meetings from about 1916 to 1920 especially, will disclose a number of papers explaining fully how to make the changes in carding which were being advocated here in the South during that time.

"Theoretically, light, quick carding will give stronger and more even yarn—that is why many mills in the South have installed additional cards. In other words, you want to get as thin a sheet of cotton as possible between the flats and cylinders, and then get it out of the cards as quickly as possible.

"A cotton fiber is supposed to have what we call 'beard' on it; that is, when it is first drawn in the card, or on the drawing frame, it sets up more resistance than it does when it is drawn the second time. To illustrate this: you can go to the drawing frame and take six cans of drawing, set them in the back, and run through to make six cans at the front. Then take those six cans and put them at the back again. After doing this six or eight times, you will find that you can hardly pick up the sliver because the cotton fibers, having been drawn so much, are slick. That is why we want to get cotton out of the card as quickly as possible so that the yarn will be stronger in the spinning process.

"I am quite sure you could have made this change by merely increasing the draft on the card from 90 to 110 and then speeding up the card to get the same production you were getting. This of course would have cut the sliver down to about 53 grains. Then go to the first drawing and either cut the draft on the drawing to put the sliver back up, or add one more doubling to the drawing. In this way, I believe you would have gotten a much cleaner web. and a web with much less neps in it.

"I have had to figure backwards to find out about what your lap was. I took your 65-grain card sliver and multiplied it by a 90 draft which gave me 5,850 grains going into the cards. Then I divided this by 437.5 grains in one ounce, which gives about a 13½-ounce lap, allowing for the waste on the card.

"As stated, I believe you might try using this same lap, increase the draft of the card, and then speed up the card to get the pounds through. This would of course reduce the weight of the card sliver, and you could step up on the drawing and get the weight back to where the fly frames would be the same as they were before. This method, in my opinion, would give better cleaning on the pickers, better carding on the cards, and a better draft on the drawing."

CONTRIBUTOR No. 4057.

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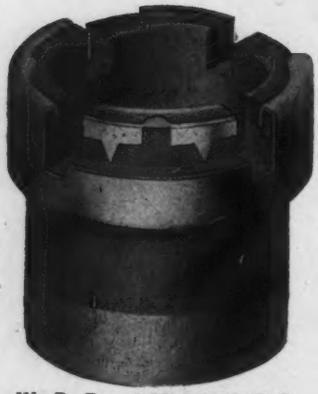

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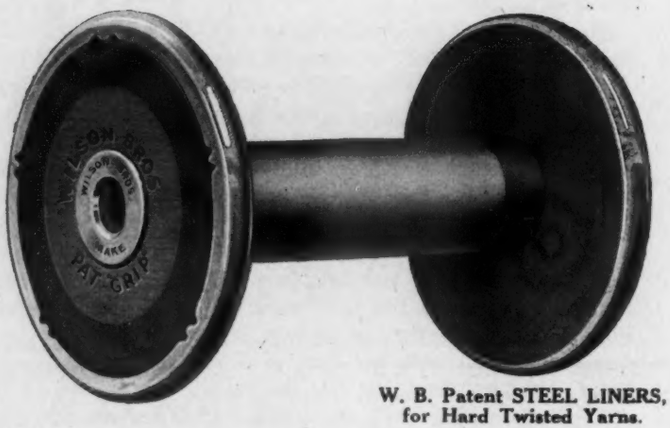

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Counting the Warp and Pick in Cloth.

EDITOR COTTON:

In the August issue, "CONTRIBUTOR No. 4036" asks for methods of counting warp and pick in cloth. I assume that he refers to the difference found in the sley in the center of the cloth and in the selvages. As a general rule, I always use the sley found in the center of the cloth as a basis for my calculations when analyzing a fabric, or otherwise figuring for reproduction. For example, I recall a fabric required to be 112 sley. In the center of the cloth the sley is 112, yet within five inches or so of either selvage one can count 112.5 sley.

It is a well known fact among most weavers that practically all fabrics contract more in the selvages than in the center of the cloth. It is a usual thing among customers, commission houses and mills to allow a tolerance of one end, or pick, up and down. That is, if an order calls for 100 sley, 99 sley or 101 sley comes within the limit. As for the pick, to my mind this should always be determined by counting well towards the center of the cloth.

If the inquirer is experiencing any trouble in weaving his fabrics to the required sley, and his harness and reeds are of the correct number, I would suggest that he find out if the loom fixers are using right and left hand temples on all the looms. I have had experiences with fixers, and even overseers, who did not know that such a thing as right and left hand temples existed. What's more, when placed before them, they could not tell the right hand from the left hand temples and vice versa.

CONTRIBUTOR No. 4067.

Preventing Long Chain Warps Rolling and Locking at Beamer.

EDITOR COTTON:

Regarding the trouble of long chain warps rolling or locking, and giving considerable trouble at the beamer, brought up by "CONTRIBUTOR No. 4056" in a recent issue. This is something we have had to fight for a long time, and I will give you my experience regarding it.

This man said his warps are made in two different mills, and the trouble developed in warps from both plants, at about the same time indicating that it is not caused in the warping, but in the indigo dyeing machines. He further said he had checked over this carefully, but had been unable to locate the cause.

In the first place, I do not think this is caused in the indigo vat, so we will get rid of that by the process of elimination. We have had trouble with rolls in vats and wash boxes that had the bearings worn so that they would jam against the side of the frame which supports them. When this happens, the end warps jump off the rolls and break, or the middle warps will get twisted together and break. In the end, there is a broken warp, but not what this man complains of. He says he has gone over his rolls

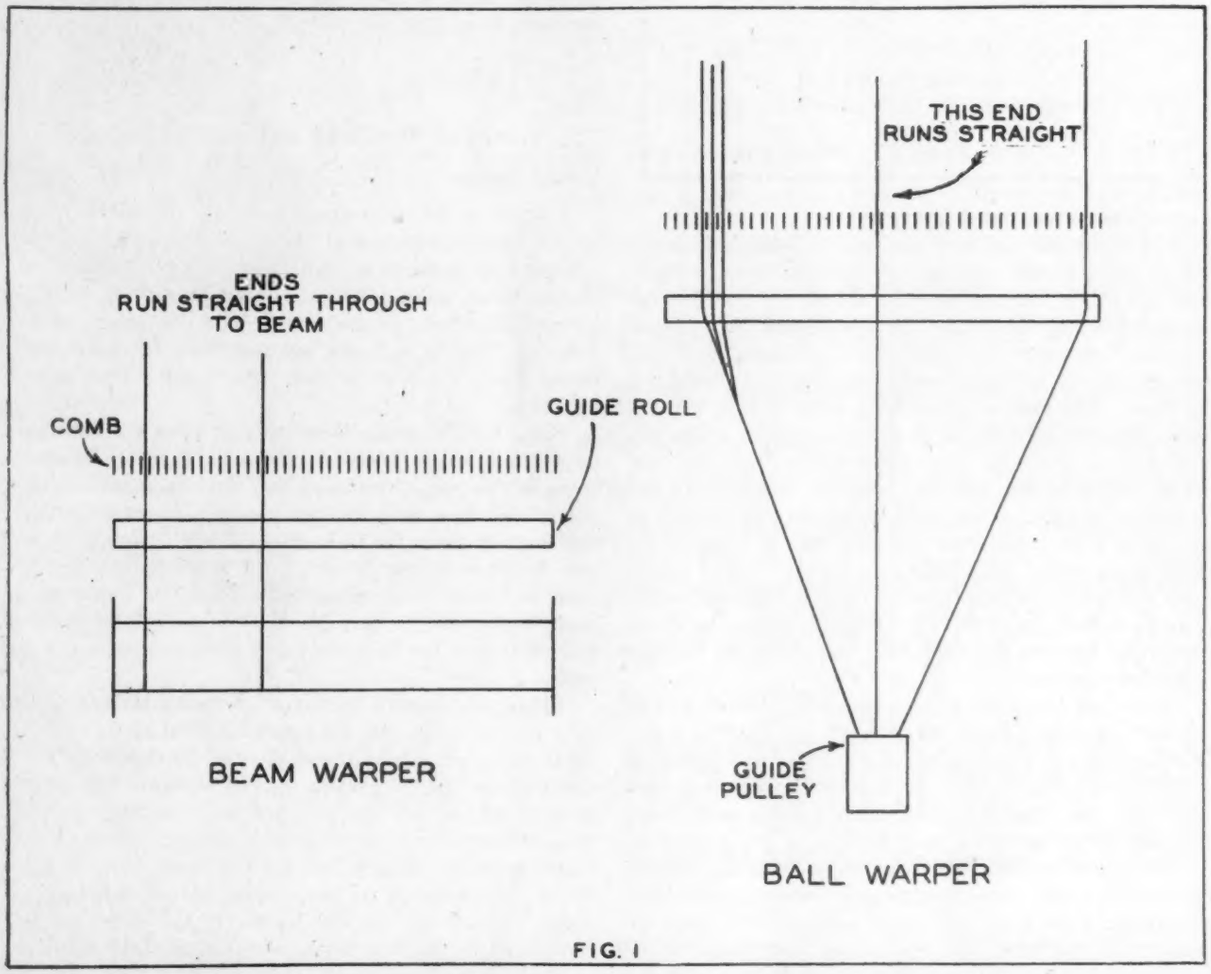

FIG. 1

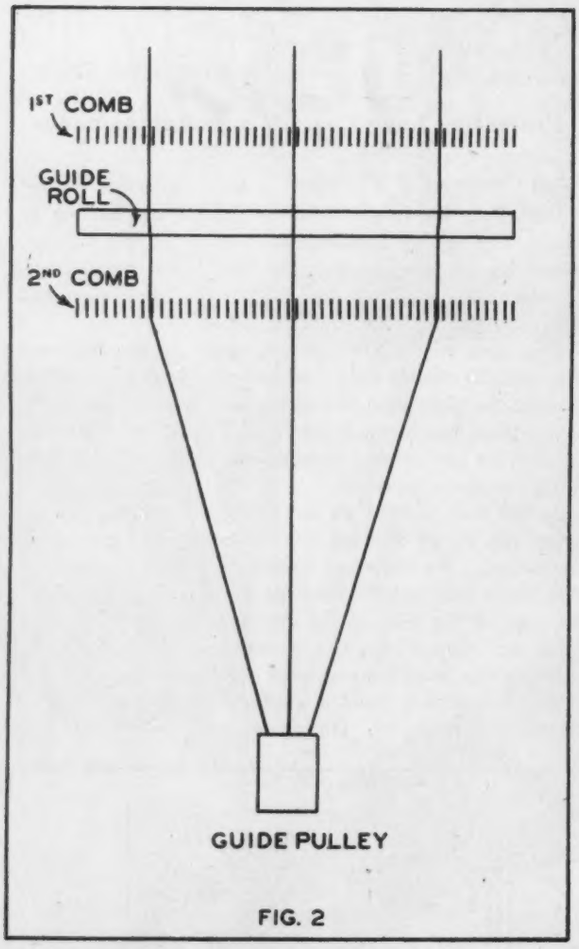

FIG. 2

anyway, so we can forget about that.

The commonest cause of this trouble is the little guide roll in front of the comb on the warpers. Beam warpers have this roll in front of the comb and the yarn passes over it, and down to the beam. It is necessary there. Ball warpers frequently have them, too. In fact, some ball warpers cannot be run without them, but they should not be there. The reason is that on a beam warper the end comes straight through the drop eyes, over the guide roll and down to the beam. On a ball warper, only the ends in the center of the warp run straight through. All the others, on account of being drawn together in a bunch at the guide pulley, run over this little roll in front of the comb at an angle. This rolls them together and of course they roll worse on the extreme edges of the warp than they do toward the middle (See Fig. 1). I have no doubt that "CONTRIBUTOR No. 4056" will find this to be the case upon investigation.

There are two ways to eliminate this. One is to run without the front guide roll. If this is not possible, a second comb can be rigged up on a stand as shown in Fig. 2, out in front of the guide roll. The ends will then go over the guide roll straight. This second comb is a nuisance, but will do the work.

Another thing that will help is to have the teeth of the warper comb twisted so they hold the ends apart. With a straight tooth comb, two ends can run very close together. If the comb teeth are twisted, half the comb one way and the other half the other way, at about a 45 degree angle, the ends are held apart and cannot roll together. (See Fig. 3.)

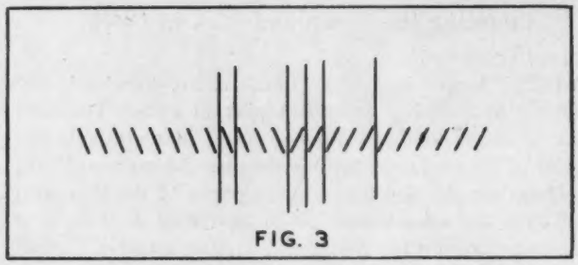

FIG. 3

The only other thing I could suggest is that there might be some difference in the twist of the yarn. We ran into this sometime ago when we were making 12s in two different spinning rooms. Everything else ran okeh, but the twelves twisted together. We finally figured it out this way: One room had tape-driven spinning—the other had band drive. The band drive had more twist than the tape drive, and the harder twisted yarn wrapped around the others. We proved it by separating the yarn from the two rooms and making balls of each. Then we quit making the 12s on the band drive spinning and have not had this trouble since. I think this might be especially appropriate, because "CONTRIBUTOR No. 4056" says his yarn is made in two mills. When they are mixed together on the warps might be where his trouble starts. I think it might be worth his while to check the twist in both mills, and experiment along this line.

H. T. (GA.).

Preenting Mis-Picks and Shuttle Marks.

EDITOR COTTON:

I notice in the September issue that "R. C. (GA.)," is having trouble with mis-picks, or shuttle marks, on his 2.85-yard 76 x 48 three leaf goods on 30-inch Model E Draper looms, making 164 picks per minute, using 17s filling and 13s warp. If the trouble is in the change, as he seems to think it is, I will say that there are a hundred causes for this and all of them are everyday loom fixing problems.

Some people set the looms so that they will not stop on a filling break, I have known loom fixers to fix their looms in this way. Presuming that the loom is set to stop, the trouble may be before the change. It could be that the bunch is made too high on the bobbin; this would allow the yarn to run down below the bunch causing the yarn to break. Four times out of five this would be a snap break with the yarn breaking outside of the shuttle making it easy for the yarn to catch on and make a mis-pick.

Shuttle marks may be caused by the bobbin not dropping far enough to pull the severed end out of the shuttle.

If he is not using Draper shuttles he should be sure that they are threading up on the first attempt. Sometimes Draper shuttles will do this, but my experience is that some other makes of shuttles do it oftener. Some of the other things that may be causing this trouble are: shuttle feeler not protecting on the change; battery not turning right; not putting the full bobbin in the center of the shuttle, or in the first notch, allowing the bobbin to lay crooked in the shuttle; not enough spring in the shuttle

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feeler; transferring too deep in shuttle; pick cam timed too late.

Be sure that the bobbin cans are deep enough to give the bobbins a good drop and see that the bunches are made so that the yarn will not catch as it is coming off.

C. M. (ALA.)

Picking a Lease for Re-Sizing Warp.

EDITOR COTTON:

In reply to the question of "CONTRIBUTOR No. 4052" as to the best method of picking a lease on a 5,000-end warp that he desires to re-slash. I would suggest that he draw a pattern of the weave through the drop wires only, this in turn being tied by the tying-in machine to the warp that he wants to lease. If the drop wires are drawn four bank, lift the first bar of drop wires and run a lease string, then the second and then the third. To get a good lease on 5,000 ends it would be better to draw eight banks of drop wires; this will give seven lease strings and should keep the warp separated for re-slashing.

CONTRIBUTOR No. 4157.

EDITOR COTTON:

In the September issue, "CONTRIBUTOR No. 4052" asks for information on the best way to pick a lease on a 5,000 end warp so that it may be re-sized from the loom beam. He does not give any information as to the counts of yarn, width of beam or whether the yarn is colored or white. At best he has quite a delicate job on his hands to make a good running warp after it is done.

There are several ways to put a single thread lease in the warp: If it is drawn in plain and still in the loom it may be leased from the harness; if the beam is cut out and on the floor, a hand-picked lease is the best. I call the leasing of a soft-dressed warp the easiest part of preparing it for re-sizing. One can readily understand that 5,000 threads of any number of yarn on one loom beam to be sized through the slasher onto another beam is a job for someone who knows something about hand dressing, or Scotch taping. I have had occasion to re-size many soft dressed warps in years gone by. I would suggest one of the ways I have done with warps up to 3,000 ends.

After having the lease made, put the beam in the creel about the second top stand; tie on as usual; have weight enough to keep the ends tight; put a rod in half lease nearest to beam; let the whole single lease go through the size to the front of the slasher and count in to suit the raddle. After the yarn is laid in put one rod in one-half lease, same shade as at back beam. This rod must be in front of the slasher comb the same as on taping.

The chances are that the yarn coming from the loom beam may not split well over the rod on account of twisting or cutting up. If this happens, put a string in where the back rod is and send it through the slasher, then put in the large split rod as usual—the yarn being sized, it will run and split much better than half-sized soft yarn.

One may use the striking comb and take a chance on the pins being about ten ends average and save time, but the half lease must be kept in front of the comb.

If this happened in a colored goods mill where beamers and dressers were used, we would, after leasing, split it up into ten pieces of 500 ends each, beam on section beams and slash as usual. Run the slasher very slowly.

CONTRIBUTOR No. 4282.

What is Correct Weight for Squeeze Rolls?

EDITOR COTTON:

I am writing to ask for some information concerning the proper weight of squeeze rolls to use on our slashers. The yarn after passing through the size box passes between two sets of squeeze rollers; the rollers weigh 285 pounds each. Our sets are made of 15s yarn, 1960 ends per set. It occurs to me that these rollers are too light and I would like to have the opinion of some of the other men on this subject.

CONTRIBUTOR No. 4084.

Remedying Split Laps on Whitin Combers

EDITOR COTTON:

In the September issue, "CONTRIBUTOR No. 4049" asks for suggestions on how to remedy split laps on Whitin combers. In this letter I will try to give him a few causes and remedies for this trouble.

The splitting of laps running on a comber is generally due to the mechanical condition of the ribbon lapper, the relative humidity of the room, or the improper formation of the laps. Other causes and faults affect the laps, but I have found these to be the major ones.

The ribbon lapper must be mechanically perfect to insure a good lap. The fault generally lies in the head; the bobbin must fit snugly against the lap disks when the lap shaft is screwed tight. Often the bobbins are too short, due to wear or careless manufacture. Any small space between the bobbin and lap disks will cause split laps by allowing the cotton, as it is forced under pressure on the bobbin, to slip down on the ends and so causing successive layers to form a tangled mass. It takes very little to start a lap to splitting. As the cotton runs off on the comber these tangled fibers resist the tension and start a split. The best remedy is to get new bobbins, but if this is inadvisable, a large washer made of fiber board, such as forms roving cans can be placed on the lap shafts and cause the bobbins to fit snugly.

The same condition arises when the thread on the end of the lap, or in the shaft nut, is worn. The bobbin will then be loose and the proper pressure can not be put on it. The lap shaft nuts require frequent renewing. If the lap disks are forced against the drums they are retarded in speed, although the forming lap revolves at the same speed, this will cause tangled ends on the laps.

Sometimes the flutes on the drums have become clogged or worn down. Their crimping effect is very essential to prevent lap splitting.

Too much pressure on the forming lap is almost as inadvisable as too little. If the racks are set exactly alike and the leather shoes are in good condition, and not worn shiny, the weights need never be placed at the end of the levers, unless the cotton is exceedingly harsh and wiry. If the racks are set the slightest distance apart the lap will certainly split. Too great importance can not be placed on this point. It is possible to set the teeth of the racks absolutely even and this must be done. Otherwise the lap will be softer on one end than on the other and will not run off evenly on the comber. The soft end will split.

The tension of the various layers to the calender rolls must be great enough to cause them to lie in an even tight sheet as they enter the rolls. If one layer is loose the fibers

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in it will tend to push out and cause a split. The curved plates must be polished and rubbed with whiting so that the tension on all the layers will be equal. The small calender rolls on the ribbon plates must be free moving and properly set in their driving gears, so that the cotton will not be loose before entering them. Settings that are too wide tend to cause split laps, but this seldom occurs. A glance at the ribbon passing over the curved plates will indicate whether the rolls are set correctly.

The remaining major cause of splitting laps is the humidity of the room. Combers require a relative humidity of 60 to 70 per cent with low humidity, the static electricity in the cotton fibers causes them to push themselves away from each other, and this will cause split laps. This is similar to picker laps on cards under very low relative humidity, but in this case the action is intensified by the fact that the fibers are laid parallel instead of in all directions as in picker laps. Thus, when they push away from each other they separate themselves more completely. Add to this the fact that the lap is very much thinner and the need for much higher relative humidity can easily be understood.

D. P. T. (MASS.)

EDITOR COTTON:

In the August number of COTTON I note that "CONTRIBUTOR No. 4049" is having trouble with split laps on his Whitin combers. Having encountered similar difficulties with this type of work, I am glad of the opportunity to pass along a few suggestions that may prove helpful in eliminating this trouble.

The trouble, I believe, may be laid to the lap machines or location of the combers, rather than to the make-up of the lap. With such a heavy lap as one weighing 510 grains no difficulty from lap splitting should be experienced. I do not believe that the front roll speed of the ribbon lap machine is responsible for the split laps, for in our mill we run these rolls at a speed of 466 r. p. m.

First, I would suggest that he check up on the friction on his ribbon lap machines, oftentimes the cause of split laps is found in the friction of these machines. It would be an excellent plan to put new leather on the friction, for if the present leather is oil-soaked or gummy, it has a tendency to make the lap racks jump and run unsteadily instead of smoothly. This uneven running packs the sliver in the lap very tightly and when placed in the combers the ends will not unroll, therefore, making a split lap.

A second cause may be traced directly to drafts of air circulating through the comber room. In our mill the combers are near the picker room, the two rooms being connected by a narrow corridor. Air blowing through this corridor passed over our combers, lifting the staple and causing them to lick up instead of going down into the nipper knives to be combed. The ends would continue to wind around the lap. This was found to cause our difficulty and make our split laps. By placing cloth screens between the combers and the corridor and making sure that no windows were opened near the combers that were affected by split laps, we eliminated the drafts of air and likewise our trouble we had from split laps.

I hope that after checking up on these two possible solutions to his problem, "CONTRIBUTOR No. 4049" will have located his trouble and eliminated it.

L. L. (MASS.)

A Hygrometer System of Keeping Weights.

EDITOR COTTON:

There has been much said during the last few months about correcting the weights of the laps in the picker room, the finished drawing, and the tension on roving frames to a definite amount of moisture. By doing this there is less changing of gears in the spinning room and the cloth weights are kept more uniform. We use a hygrometer system in our mill and I will try to give a working sketch of this system for the benefit of any who might be interested.

The advantage of keeping numbers and weights by the hygrometer system is that the cotton contains the same amount of moisture as does the atmosphere of the room, therefore, a system like this will eliminate artificial sizing, or sizing water for cotton.

We have one hygrometer for the picker room and one for the finisher drawing. The hygrometer is set by the use of a sling psychrometer and a relative humidity sliding scale. Fig. 1 shows a weight table for the picker tender to follow

RELATIVE HUMIDITY	NUMBER OF WEIGHTS USED
65	NONE
60	1
55	2
50	3
45	4
40	5
35	6
30	7
25	8

WEIGHT TABLE FOR PICKER SCALE

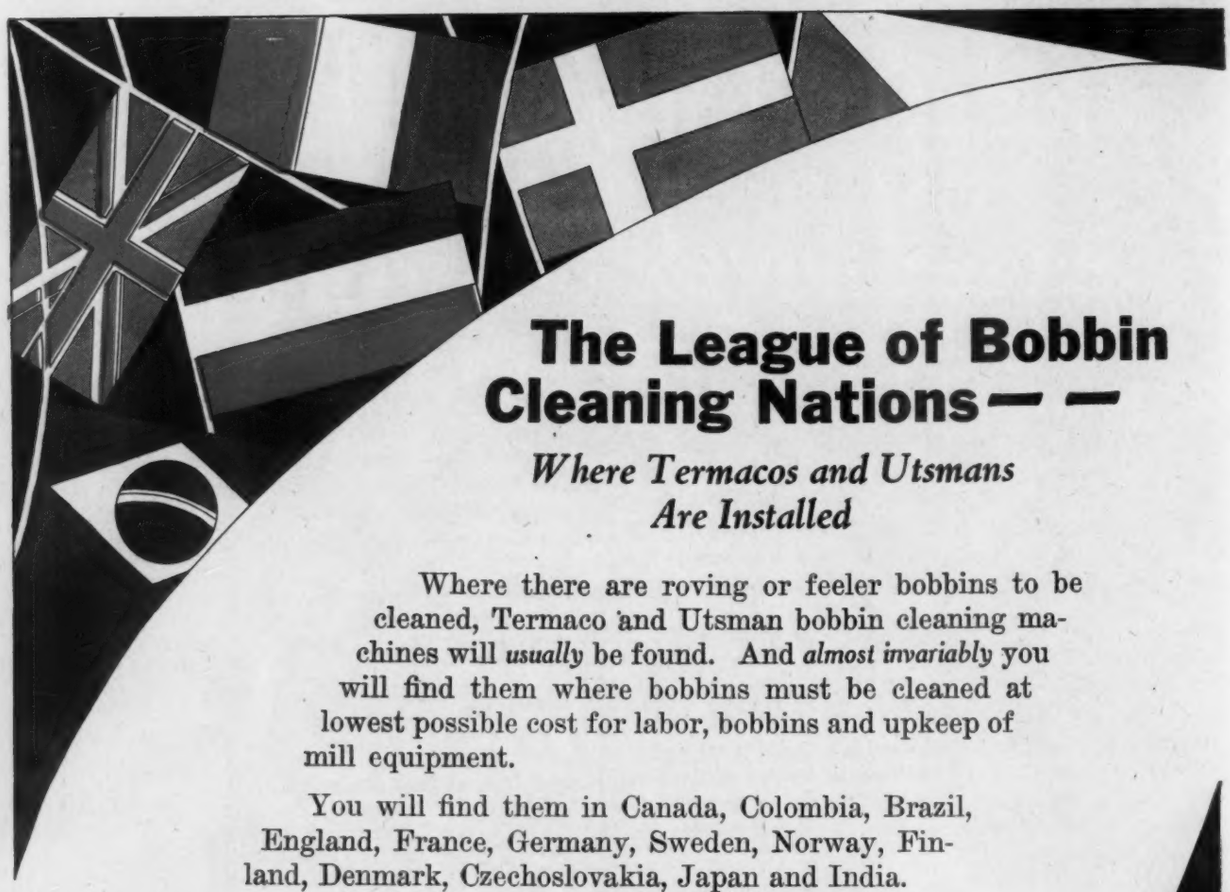
FIG. 1

in hanging weights on the scales where the finisher laps are weighed. When the reading of the hygrometer is 65, no weights are used on the finisher lap scales, but for every five degrees change an extra weight is added; when the reading hand is at 25, eight weights are used.

This is the method to use for finding the correct weight for the weights to hang on the scales. Take the relative humidity of 50 on the sliding scale, this shows a cotton regain of six per cent moisture. Then slide the scale to 55; this shows a regain of 6 1-2 per cent. From 50 to 55 there is a regain of 1-2 per cent (6 1-2 — 6 = 1-2). A 19-ounce finisher lap is being made and the length of the lap is 52-yards. Then 52 X 19 X .005 = 4.94, or 5 ounces. A set of eight weights, each weighing five ounces, should be made for the picker tender to hang on the scales when needed.

After the cotton has passed through the process of carding, it is back in a dry condition again. Carding is really a combing or brushing action as the cotton is operated on by a series of wire teeth, which has the same effect as loosely holding a few fibers at a time and striking them with a comb. The cotton that is taken from the licker in by the cylinder is almost separated into individual fibers. Due to the centrifugal force of the cylinder, the fibers are thrown against points of wire, which comb the fibers out while heavier impurities are thrown out.

Any one knowing how clothes are dried in some of the laundries — by rapidly revolving them in a large circular vessel—can see that after cotton has undergone the carding



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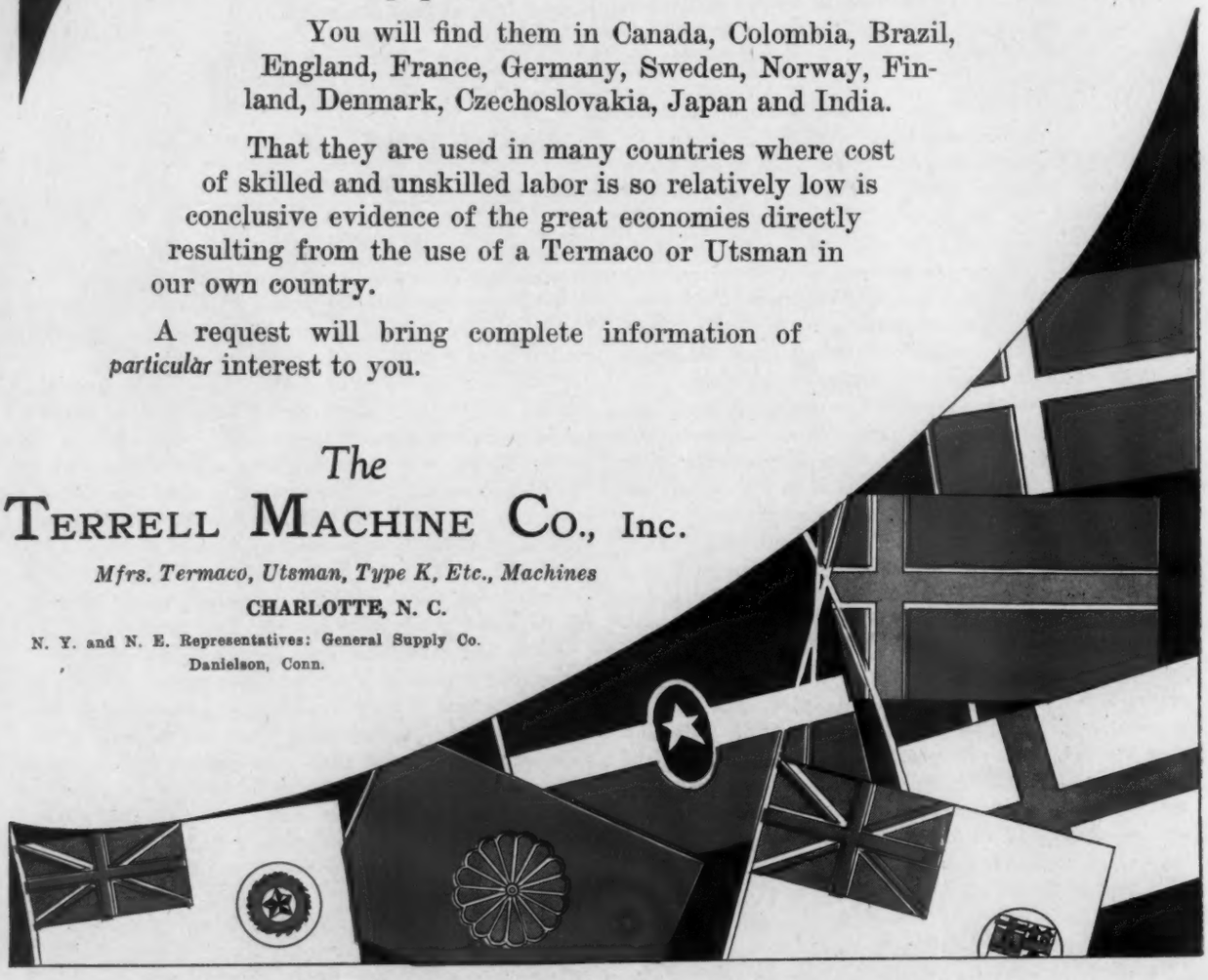

TABLE FOR STANDARD WEIGHTS

Relative Humidity	Regain	Drawing Standard
40	5.1%	52.77
41	5.2%	52.82
42	5.3%	52.88
43	5.4%	52.93
44	5.5%	52.98
45	5.55%	53.01
46	5.65%	53.06
47	5.7%	53.09
48	5.8%	53.15
49	5.9%	53.20
50	6%	53.25
51	6.1%	53.30
52	6.2%	53.35
53	6.3%	53.41
54	6.4%	53.46
55	6.5%	53.52
56	6.6%	53.57
57	6.7%	53.62
58	6.8%	53.68
59	6.9%	53.73
60	7%	53.78
61	7.1%	53.84
62	7.25%	53.92
63	7.4%	54.00
64	7.55%	54.08
65	7.7%	54.15

Fig. 2.

HYGROMETER TENSION GEAR CHANGE TABLE

READING OF HYGROMETER	65	60	55	50	45	40
SLUBBER TENSION GEAR	45 O	46 O	47 O	48 O	49 O	50 O
INTERMEDIATE TENSION GEAR	23 O	24 O	25 O	26 O	27 O	28 O
SPEEDER TENSION GEAR	29 O	30 O	31 O	32 O	33 O	34 O

FIG. 3

process it is again in a dry condition; therefore, it will again take up moisture from the atmosphere of the room.

As we make the finisher drawing, out changing place for keeping numbers and weights, we use a hygrometer at this point. Fig. 2 shows a table for standard weights made from the readings of the hygrometer. This table is figured by the same method as the one used in the picker room. For example: if the hygrometer reading is 60, this gives a regain of 7 per cent and our standard to figure from is a 50 reading of the hygrometer. Then 7 per cent minus 6 per cent equals 1 per cent; 53.25 x .01 = .5325 or .53; 53.25 + 53 = 53.78 drawing standard.

We size our drawing every time it doffs. The way this is handled, to avoid a great deal of trouble, is that we have a table in a handy place for the drawing tender and room enough on it to lay a size from each machine. This table has a 36-inch measuring board to open and shut by hinges. After all the machines are doffed and a size laid on the table from each machine they are all weighed together and the average weight per yard is figured. If it is found to vary one-half grain from standard either way a change is made in the draft gears to bring it back to standard.

Now we all know what happens when a lot of stretched roving gets in the spinning room and what it will do to the work. Fig. 3 is a sketch of the system that we have been using for changing the tension gears on fly frames. It is a wooden board 18 x 6 inches. By the use of a hygrometer we keep check on the amount of moisture in the room and change the tension gears to avoid stretched roving.

The small figures at the top of the chart are the readings of the hygrometer, the other figures are the tension gears to use when the reading hand of the hygrometer is at that figure. There is a hole under each tension gear figure and there is a peg for each process of fly frames. In this case there are three. If the reading of the hygrometer is 55, we then peg the three holes below using a 31-tooth tension gear on fine fly frames, a 25-tooth tension gear on intermediates and a 47-tooth tension gear on slubbers.

CONTRIBUTOR NO. 4046.

The Effect of Weaving on Shrinkage

EDITOR COTTON:

What is there in slashing, spinning or weaving that makes goods shrink, and what are the best practices to reduce this to a minimum? I have in mind particularly, shrinkage in the filling, and I would be very glad to have some of your readers discuss this question.

CONTRIBUTOR NO. 4086.

Preventing Bad Work on Plied Yarns.

EDITOR COTTON:

Encouraged by the acceptance of my article on oiling, I am taking up the treatment of another subject which appears to be somewhat neglected, namely, bad work. In this letter I am confining my discussion to the handling of plied yarns after leaving the twisters and before being used at the winders, warpers, beamers and quillers. Since this subject is such a big one, the causes and prevention of bad work from the various machines and from the several departments of a textile mill would require separate treatment. Later, I may attempt this.

Bad work, like disease, can be best handled by preventive measures. I know of no place where the old adage, "An ounce of prevention is worth a pound of cure", is more applicable. A weaver can, with some trouble, get up loose ends on the loom, but how much better would it be to have the warps made right in the first place! The result would be more production from the weave room and better quality. I received much of my training under a very successful overseer, one of whose hobbies was bad work. He never let an opportunity pass to impress upon me the importance of keeping this item well in hand.

Every department should have at least one capable person in charge of yarn reclamation. A good man will pay for himself many times over in waste saved alone. Of course splicing in duck mills is a form of yarn reclamation, and in this department more than one hand will be necessary. But generally speaking, one person in each department should be sufficient to look after bad work. Putting out enough money on this job to get a good man will pay. The writer knows of a case where the job of reworking bad filling was paying 16½ cents per hour. The foreman got a 22-cent man on this job, and by the second week this man had saved enough in mop waste to pay both his own and the overseer's time. A good man will cooperate with his foreman by helping him to find the machine that is producing the bad yarn, as well as trying to prevent having to put the yarn into waste. He should know how to size yarn so that if he gets hold of mixed yarn which he cannot

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separate because of the similarity, he can weigh the yarn, and in this way tell which is which.

The man who takes the yarn off the twisters should put a tag on each box, showing clearly the yarn number and ply, stock, twist if other than standard, length, etc. This tag should be attached securely to the box so that there will be no likelihood of its coming off. The importance of this cannot be overestimated, for much damage can be done by yarn being marked wrong, then somebody letting it get by.

After the yarn is received from the twisting department it should be looked after by some responsible man, known in some mills as the head yarn man. He will arrange the boxes of yarn in the most convenient manner for checking and for use at the next process. If segregated according to number, checking of the yarn will be easier. Such a man can be of real service by watching out for mixed yarn, boxes with the wrong tags, oily yarn, etc. He will receive all pieces from the twisters and turn them over to the man in charge of splicing and respooling.

Since it is usually some defect in the yarn, or something wrong with the twister that causes the end to come down and the frame to make a piece, pieces are often found to be a source of bad work in the subsequent processes. Singlings, doublings, oil, dabs, slack twisted yarn, hard ends should all be looked for on the pieces. The man in charge of the yarn can render a real service by taking out yarn of this kind. Yarn respooled from pieces, whether spliced or tied with weaver's knots, should be tagged as such, and each individual package marked to identify the person running it. The head yarn man will also have charge of this rewound yarn. Further duties of this individual will be the checking of all yarns on hand at the proper intervals, assisting those who use the yarn to get it out, keep the yarn and the floor clean, etc.

A frequent and a very annoying source of bad work, especially in mills that finish their cloth in the gray, is old yarn mixed with new stock causing streaked goods. Many goods are sold almost entirely on appearance, so streaks will detract much from their salable value. Steps should be taken to avoid accumulating yarns for goods for which the mill has no orders. There are other reasons than the one just cited. Yarns of this nature represent money tied up that will yield absolutely no income, but are rather a burden since taxes and insurance costs must be paid on them. Boxes of old yarn often become dumping places for junk of all kinds, odd numbers of yarn and accumulate dirt and waste. A mill I have in mind has a system of ordering yarn to cover deliveries needed. In this way a fairly close run-out is possible.

Should it be necessary to put yarn in stock, I would suggest that all pieces be rewound so that the yarn packages will be of uniform size. The packages should be counted and placed, preferably, in a roller box. (I might stop here long enough to say that I do not like bins for storing stock yarn, unless they are small and easily cleaned. Boxes have a habit of getting in people's way. Then they have to be moved frequently to be swept under. This, I think, causes all concerned to do everything possible to avoid stocking yarn.) A tag showing the yarn number, ply, etc., as shown on the tag from the twisting room, and the number of packages, should be placed on top of the yarn. The yarn should then be covered with heavy paper, then with burlap, and the burlap tacked about the edges of the box. The paper will prevent dust and lint sifting through onto the yarn. The whole arrangement will have a tendency to keep the yarn in its original color. A tag, like the one on the inside, will be placed on the outside. If the tag on the outside should be torn off, the yarn can be identified by the tag on the inside of the box. A record of this yarn should be placed on the foreman's desk. And I would suggest the rechecking of all stock yarn weekly, so that when an order, on which this yarn might apply, comes in, the foreman will know exactly what he has on hand.

Filling yarns should be handled similarly to the warp yarns, but closer run-outs are possible with the filling if the proper steps are taken in ordering for the looms, but this is a different story. Stock filling yarn can often be used when it would not be possible to get by with the warp, since the filling all comes together and does not show in streaks. But the accumulation of an excess of stock yarns of any description should be avoided as much as possible.

Before any yarn is used it should be inspected. One mill employs two experienced women to inspect all warp yarn before running. If this is not practical in every mill, some system of inspection can be employed with profit. It is not an uncommon sight in a weave room to see mixed yarn being taken out of some of the warps. I have even heard of a weaver who actually wove some of the wrong kind of yarn into his cloth. Why wait and do all of the inspecting in the cloth room? If some inspecting is done before the cloth is woven many defects will never show up.

The second hand will, of course, supervise this work closely. He should keep himself posted at all times as to the movement of the stock in process. He will not permit promiscuous emptying of yarn from one box into another with more yarn, as this is a common cause of yarn getting mixed. He will see that the oldest yarn is used first where possible. He should also okeh all bad work before allowing it to be sent back to the twister department, etc.

In many ways can the proper handling of plied yarns prevent much bad work, and improve the quality of the product.

CONTRIBUTOR NO. 4022.

Booklet on Rayon Warp Sizing.

The *How* of Successful Rayon Warp Sizing, is the name of a boolet published by The Van Vlaanderen Machine Company, Paterson, N. J. In this booklet are several photographs showing different views of the rayon slasher with explanation of the various parts and attachments. There is also a view showing the size kettles and their arrangement. The latter part of the booklet is devoted to an article, "The Sizing of Rayon," by J. J. Sussmuth. This is a discussion of the advantages and disadvantages of skein sizing, thread sizing and warp sizing, along with hints to help in the slashing of rayon.

New Products by Northern Equipment Company.

The Northern Equipment Co., Erie, Pa., announces a new differential water pressure regulating valve, the Copes Type SS Valve, which has been designed to regulate the excess water pressure across the control valve of a feed water regulator in a boiler feed line. The company states that it can be used in connection with any feed water regulator to maintain the desired pressure drop, regardless of variations in boiler drum pressure or pump pressure, or friction loss in the feed line to the individual boiler. The new pump governor, known as the Copes Type DS Governor, is designed for installation on simplex, duplex or triplex pumps, and on turbine or motor driven centrifugal pumps.

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Moisture Content in Cotton.

EDITOR COTTON:

The natural average moisture content of raw cotton is eight per cent. Cotton as received and paid for contains an unknown percentage of moisture. That it varies according to its source and breed is quite true, and so long as it tests out for moisture according to the theoretical percentage, the buyer must be content. He buys cotton to sample submitted; grade and type are known to him and it is his duty to see that the mill receiving the cotton weighs and samples each bale. If the cotton is neither wet or damp, the tares averaging the weight allowed under the rules of the exchanges in which he buys, and provided it is up to sample, he pays his check and it is passed through his mill as correct.

We will assume he buys one thousand bales, and the total weight is 500,000 pounds; at 20 cents per pound, the amount he has to pay is $100,000. When the bales are received and weighed at the mill, the weight is 500,050 pounds, a gain of 50 pounds or .01 per cent. This may be due to moisture, dirt, etc., gathered up during its voyage to the mill. As he only pays for 500,000 pounds and is testing out the cotton for waste during its various processes, he commences with the actual invoiced gross weight, namely, 500,000 pounds.

If he is prepared to do so, he can take average samples of the raw cotton and by means of chemically drying in an oven and weighing it before and after drying, he can ascertain the average percentage of moisture in his cotton before processing.

As the cotton is practically going through a cleaning process until it leaves the pickers, and then onward to the cloth room is undergoing varying wear and tear processes, and at every operation is losing a certain percentage of waste; also, at the same time assimilating a certain percentage of natural and artificial moisture—then these percentages can only be used as a check against each process as begun and finished.

If the mill is run as it should be, and the spinning and weaving departments checked for waste, weights, rovings, laps, etc., the counts constantly checked and the weaving calculations made for actual lengths, widths, etc., not a general assumption as in some mills, the manufacturer will know what weight of cloth less size and waste, that he has made from his weights of cotton received.

If he cares to do so and his mill is large enough to bear the expense, I should advise him to install a textile chemical laboratory, with a textile expert and boy in charge. If this man is constantly employed in calculating the percentages of moisture in the various processes from raw stock to the finished cloth and collecting data for future reference—and I should combine with this department the yarn sizing department; the whole being in control of the cost clerk, who is solely responsible to the manager—then I think the manufacturer would know where his losses or gains in moisture could be regulated, for if cotton is at saturation point as it ended up in the cloth room, the finishing department would have to make up the deficiency in weight by means of starch, etc., for cotton will not so readily absorb moisture when loaded with finish as it will in the raw state.

The spinning department would be at its greatest efficiency when the actual scale weight of spun yarn did not vary above one per cent either way from calculation weight.

Naturally, when yarn is being spun, it has a tendency to dry out, and by means of the textile laboratory, the moisture content can be found. Apart from the use of humidifiers, if yarn is allowed to condition in a cool cellar or room for about a week or ten days, there is a regain of anywhere from two to three per cent; spinning having been on the fine side. Consider what this means in money.

To work out the foregoing, cotton must be mixed at invoice weight and price; there must be average testings for waste at the bale opener, pickers, cards, combers, slubbers, intermediates, roving frames, rings or mules, winders, warpers, slashers and the loom.

The percentage of size on the warps must be allowed for and when the cloth is woven, apart from actual calculations, using 840 yards to the hank, which will give the actual yarn used in the cloth, it must also be tested for moisture, size and impurities.

The actual waste sold, or even if used up at the mill, must be weighed and recorded, and tested against the calculated waste allowances.

It is only by these careful check-ups against departments, that one can ascertain, somewhat, the waste made. I am presuming that the stock is taken as perfectly as possible.

There is a certain amount of flexibility in working out raw cotton to the finished cloth, and it is usually found underneath the column marked "invisible loss", and I believe if a little more attention were paid to detail in process where a lot of waste is put underneath "invisible loss", that improvement would make more profits or turn more losses into profits, and also land many an order which goes elsewhere. For instance, how many mill men know what amount of dirt (sand and leaf) is taken out of a certain delivery of cotton? Perhaps when buying, it is a cent a pound cheaper than another lot, but if the two could be mixed and the amount of dirt, etc., allowed for after careful testing, the cheaper cotton would probably be the dearer.

Then again, take a mill with a bleaching, dyeing and finishing plant. If cloths are sent from the gray cloth room into this department, at so many pieces, of such an average yards and pounds per piece, according to the make—averages, not actuals—then in estimating cost, through the various stages, the same lengths and averages are used and even in the making up and packing room, the same averages are used for cost estimating. Why, in the name of common sense, I do not know, when most cloth is sold by the yard and has to accurately invoice as such, also conforming to weight.

As this is actually tabulated at the outgoing end, so it could be at the beginning. This would show somewhat the amount of regain or loss.

I have refrained from using figures generally, for every mill has its own problems and has its own ideas, but there is always common ground for each to work upon, and I am hoping your readers will be able to work out some method of ascertaining waste, checking same, using actual weights and costs and not hypothetical figures, bearing in mind that calculation and actual weights should balance as nearly as possible.

The cotton trade generally has been built up by rule-of-thumb methods and has sometimes been a good dividend

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payer, but now, when competition at home and abroad is so keen, it is up to the present generation to apply and tabulate their methods until such an assemblance has become scientific, and I think that we can look to such methods in the near future as solving some of our most intricate problems.

In testing out for moisture, cotton will lose from 5 to 8 per cent in weight. This loss represents the natural or hygroscopic moisture. Cotton thus dried will soon gain weight by absorption of moisture normally found in the air. The actual loss or regain of weight depends on the humidity of the atmosphere, but it is seldom less than six per cent, even in dry weather, or more than eight per cent on a cold wet day. This factor is important in many respects. For instance, when checking the weight of goods during work's process, it must be remembered that they will average seven per cent less weight when freshly dried than after a few hours drying.

CONTRIBUTOR No. 4078.

Causes of Thick and Thin Places.

EDITOR COTTON:

Concerning the causes of thick and thin places which show up every two or three inches in yarn, I should like to mention a few which I believe to be outstanding.

The first I will mention is: cotton purchased in a haphazard manner, regardless of the length of staple. In order to have yarn that looks even to the eye, it is necessary to start with a grade of cotton that runs nearly the same length of the staple, bale for bale. It will pay any mill the salary of a good cotton buyer to select cotton by staple for the class of yarn the mill is making. For instance, 10s yarn can be made from cotton that 30s could not be made of successfully, and the difference in the price of the two kinds of cotton would pay a cotton buyer or grader a good salary.

The first machine to cause thick and thin places is the drawing frame—a machine so simple a fool can run it, so I have heard it said. I don't happen to think so myself, as I am willing to go on record as making this statement: There is more uneven work made at the drawing frames than on any other machine in the process of manufacturing yarns, partly due to ignorance on the part of the operator, and the man in charge of the job. The drawing frame, if properly working, should deliver a sliver that looks like a ribbon—free from shaded places—between the front rolls and calender rolls and it should not have any tension or drag except just enough to prevent sagging. The trumpet should be bored to suit the sliver being run, avoiding excess friction. The sliver from the cards should be as light as it can possibly be run to get the required production, and the draft should never exceed the doubling. I find it looks better when I run the draft of my frames less than the doubling. If the drafts are long the rolls soon hollow out, and this will cause the sliver to slip through in lumps. Therefore, the light sliver and short drafts make the best yarn. By this arrangement a man can set his rolls with the proper spacing to suit the length of staple and not suit the bulk of cotton coming through.

I have been using cork rolls in my drawing for the past eighteen months, and have buffed them three times. Since using them our work is more even and freer from shaded places. We were bothered with the leather rolls licking up on cold frosty mornings, due to sweat coming from the roof of the mill, but we have no more of that trouble now. We find by practical experience, that cork rolls will run indefinitely, if properly oiled and cleaned, with the weights kept in adjustment.

The slubber being the next machine which the sliver goes through, we will take it and see where some of the thick and thin places come from. First, we look to the drafting motion. Our steel rolls must be properly set and lined and the top rolls likewise, and with the proper amount of weight on the rolls to hold them and permit no slipping to cause lumpy roving to be made.

I was once in a mill where the drawing sliver was run as 85-grains for .40-hank roving. The weight on the slubber would not hold the sliver tight, and the slubber roving was full of lumps (not drawn out properly). The roving and yarn showed up all through the mill with thick and thin places, but due to the fact that they were making ply duck yarns up to 12-ply, the goods did not show up the defects, but had it gone into say 7.00- to 9..00-yard sheeting, it would never have passed. The finer the goods the worse it shows up.

On the slubber there are other factors that must be looked into, due to the tender condition of the roving. One is the amount of twist. There should be enough to make the work run well, and pull in the creel without any stretch. The lay and tension on the slubbers must be as nearly perfect as possible, as any undue tension will make thick and thin places. The shell rolls should be cleaned and oiled each week. The shells should be matched; in fact, both bosses of a roll, either solid or shell should be the same size.

The next machine is the intermediate speeder. Here the same rules apply as on the slubbers, regarding the draft motion (rollers, tension and twist), with this precaution—frame tenders should not be allowed to overlap ends when creeling, as this will cause doublings. The length of the draft on the frame should be 4½ to 6. This will make heavy roving, and if on fine goods will show a heavy thread in the warp or filling. I know of a mill making fine lawns that had to change to single creels in spinning in order to overcome this trouble.

The fine speeder, which is the next machine the roving passes through, requires the same attention as the intermediate in every particular. And by all means, don't let the help tamper with the tension or rack gear, as this will play havoc in the spinning, causing the roving to break back and make all kinds of numbers. A mill's best efforts should be put forth to make the roving for perfect spinning, and, as I once heard the president of the New England Manufacturers Association say, "You can spin it on a wheel-barrow".

The last machine is the spinning frame, where we find several things that cause thick and thin places. The gearing is of a fine pitch and the gears must be set just right on all rolls, both driver and driven. The steel rolls must be sharp; that is to say, when one takes hold of a roll with finger and thumb, it should have a good grip. If the finger and thumb lie easily on the rolls, the rolls are worn too smooth to hold the roving firmly when being drawn; hence, there will be a slip draft causing thick and thin places to show up more readily than on sharp rolls. Don't

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try to spin even yarn with top rolls that are hollowed out; it can't be done. Keep the yarn saddles, stirrups and levers set in their proper position, the rolls thoroughly cleaned and properly oiled, with oil that will stay on the bearings and not run on the leather, and there will be good, even looking yarn; that is, provided that the roving is properly prepared. There is an old adage handed down to me that I have found to be true in every instance, to wit: Machinery that is properly oiled and cleaned, runs well. I have followed this up for the past 35 years, and it has never failed to give results.

O. T. (N. C.)

Humidity Control and Records.

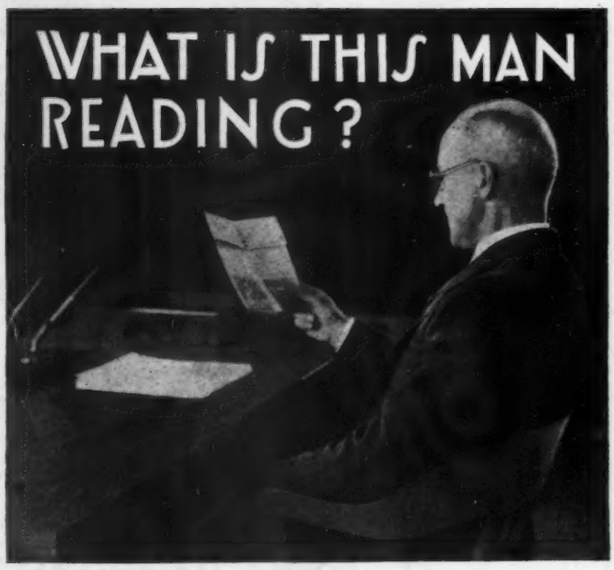
EDITOR COTTON:

Humidity is one of the more essential things to have in the course of cotton manufacturing, and one never knows the benefit of it until he has had the advantage of the latest type of humidifier heads, with a pump pressure of around 200 pounds. Then, he should keep his filter beds cleaned and the nozzles in good working order at the heads, and set the controllers at the required amount of moisture that his work will stand, or at what he thinks the work will run the best (this covers all different kinds of cotton and conditions in the mill) to be a successful mill, regardless of systems or technicalities of those at the office end of the institution. These systems and technicalities sometimes really interfere ,though they are honest when giving advice to the men in the mill. Sometimes we have to humor the stock. Though it may be from negligence or from not watching at the proper time, anyway, the best of us get caught sometimes, for we can only be at one place at a time, and the men are told to be sure before making a change. But we do know that cotton has to have so much moisture to work at its best.

I expect to have some recording clock dials in the near future to show the humidity for the week's run in the different departments. This will tell the tale, without the intermittent reading which only shows how it was when the readings were taken.

The greatest trouble that the average mill man has is to get the mill to see the need of those up-to-date instruments for recording moisture. This, like a seven-day clock, does its duty whether it is being watched or not. You can examine it daily, then at the week-end, take the dial off and file it away. In the meantime, you can figure whether you have what moisture you should have in the cotton or not, for it's a lead pipe cinch, that if you neglect the moisture in your goods, you have to make up for it in cotton, for the goods must weigh the standard. That's the story.

The writer has had experience with, and without, moisture in the cloth room. The first equipment that I could get was atomizers; that helped out wonderfully. We kept adding those until we had a very good moisture content in the room, but then we did not know anything for sure, for our checking up on the thing was kind of helter-skelter, though it was some improvement over that to which we had been accustomed. Later on, we secured the latest type of heads with a good pressure, and controllers, and we set them at our requirements (just speaking of the cloth room) and looked after the minor adjustments until



HE is responsible for efficient production in a large mill. He must know which looms are producing and which are lagging. He must set the pace for weavers and maintain quality of production. He has written for our book "Productimeter Pick Counters, — Their Application and Use" and is now studying it to see if Pick Counters can do him any good. We will be glad to send you the same book — "Productimeter Pick Counters" — if you will write directly or to Roby & Davis, Builders Building, Charlotte, N. C. or to Leo A. Nourie, 310 Strand Building, Providence, R. I.

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they were going well. It was surprising to note the evenness of our clothroom weights. Heretofore, we were constantly changing, either in the carding or the spinning, to catch some light or heavy cloth. We ran along this way for quite a while, then got a recording hygrometer, which showed the workings of the controllers for a week's run. In this way we can keep our moisture content up to a standard, and what variation there is then is the true variation of possibly the finisher weigher in the picker room, together with unevenness of the tensions at various machines, and the different causes with which most of us are already familiar.

To get back to what the writer was most anxious to point out, the necessary reason for having the correct amount of moisture for the cloth room is that this is where the cloth passes through the last place of weighing, and our weights are determined from this department as to whether they are right or not, when they are corrected accordingly. Then suppose we do not have the right amount of moisture. That has to be taken into consideration. But if we have those recording instruments we can check up on them and have everything lined up, and when we make changes we are on the right track.

Now then, suppose a moisture regain of 8 per cent is allowed and the bales of cloth are weighing say 300 pounds each, and the moisture falls down to 7 per cent regain, that's 1 per cent loss, isn't it? All right, 1 per cent is equal to 3 pounds in 300, and say that you are getting 40 cents per pound, $30 \times 40 = \$1.20$ per bale that you are going to have to make up in weight if you neglect the moisture. The buyer wants the proper amount of moisture to make the cloth work well; he doesn't care for it being heavy; it's nothing to him. He wants it to work and look alive while on the counter, or at the finishing plants.

So it is up to the mills to have what is coming to them in the way of moisture, to keep the weights and to protect the mill from giving away cotton to make up for loss in the proper amount of moisture. The recording instrument is the cheapest and safest in the long run, and really so far, is in a class by itself. When you have one of these things, put it where you want it and you can depend on its accuracy; then too, it saves a man's time going around, as we had to do, to check up on those things to see that we were getting the best results. Even then, we had to deal with the human element of the check, and when one has this to contend with, one has a wide field.

Even the best of them you would hardly take into your confidence and take the time to figure the thing out with them; telling them just what you are after by taking all those records, and so by-and-by they will say "What's the use? I'll make the round quick today; he never says anything anyhow. He gives the other fellow orders to change my records, and if he undertakes to check records it'll be different when he goes; if it isn't I can draw him off by using the fractions of the gauges off on one side and on the other, and that will make a point or one-and-a-half to two points. So I can figure to beat him nearly two points." And that's quite a difference in the amount of regain in cotton, but the instrument puts it up there and there is no arguing with the "sign-board", so to speak.

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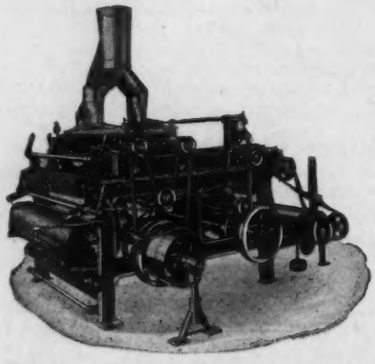

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Some Causes of Bad Running Spinning.

EDITOR COTTON:

May I offer a few suggestions as to the cause of work running bad in the spinning room?

There are a large number of comparatively small things, things that go unnoticed sometimes for a long time, that will cause bad running work. Uneven roving caused by poor carding and bad piecings, also stretched roving will cause a lot of trouble in the spinning room. Too much twist in the roving will cause it to draw hard and sometimes come through the rolls without being drafted, the end of the roving catching several ends and breaking them down and spoiling the roll by making a groove in it. I have seen roving twisted so hard that the skewer could be taken out and the roving placed on the creel board and the roving would keep revolving. Roving should have just enough twist to make it unwind in the spinning frame.

On the spinning frame if the creel rods over which the roving is drawn are set too high the roving will be stretched when it gets to the bottom of the bobbin due to the straight pull upward. If the rods are set too low the roving will be stretched when it gets to the top of the bobbin due to being pulled too straight downward. Some of the skewers are blunt on the ends. This will cause roving with the proper amount of twist to be stretched; sometimes it will break back in the creel. Sometimes on certain makes of frames the roving trumpet rod will stick for a short time and when it moves again it will jump, causing some of the ends to come down. The trumpet rod may be making too long a traverse or too short a traverse; sometimes only a few of the trumpets need adjusting.

Rings that are badly worn should be replaced with new rings. The new rings should be put on one frame and the rings from that frame used for replacements where only a few rings are needed.

When a guide wire becomes grooved it should be replaced, as the yarn will catch in the groove and cause the end to come down. Spindles and guide wires should be kept properly set by having them gone over at least once a year. Spindles are one thing in a spinning room that do not receive the time and attention they should. Take for instance a mill on coarse numbers, say 15s, the spindles making about 8,000 r.p.m., that will be 23,000,000 revolutions per week, or 1,170,000,000 revolutions a year. Add to the effect of this the hard usage a spindle receives from doffing and the spinners piecing up the ends. Money spent on keeping them plumbed and in good shape is money well spent.

It is very important that the finger boards be set the proper distance from the top of the bobbins. If the board is set too low it will cause the yarn to chafe against the top of the bobbins causing the ends to break down. If set too high it will cause the ends to come down when at the bottom of its stroke.

The creels should be set high enough so that the skewers will not extend through the top of the creel as the roving on the top of the frame will rest on the skewers causing the roving to break.

The following are some of the many things that will cause ends to come down: slack bands; travelers too light or too heavy; too much or not enough twist; vibrating spindles; waste under the spindles, causing them to turn hard; spindles not properly oiled; rolls not set right for

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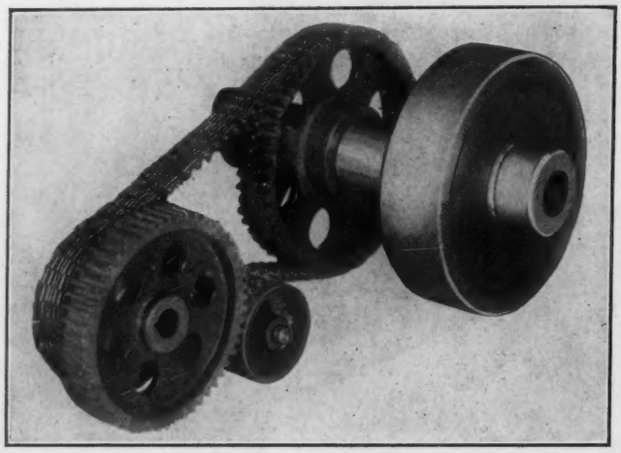

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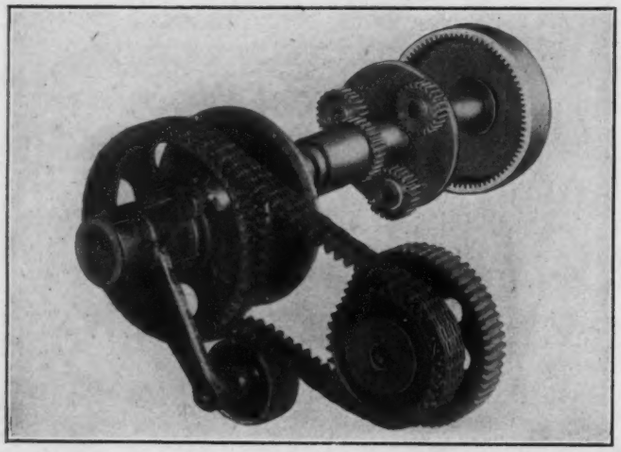

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the cotton being run; too high or too low speed on frame; separators not properly adjusted allowing the ends to whip at the top or bottom or in front of the separators; gears set to deep causing vibrating rolls; gears not set deep enough causing them to jump a tooth once in a while. The weight levers should be kept well up from the back board and the stirrups should be adjusted so that they will not touch the steel rolls. I have seen ends broken down due to vibration caused by a cylinder with a bent shaft. If the joints in the steel roll are loose this will cause a back lash which will make the ends come down. Nicks in the steel roll will give a lot of trouble. If the necks of the middle or back roll are badly worn it will cause the top rolls to rest on the cap bar fingers.

The frame should be kept clean at all times and scoured at regular periods. The room should be kept at right temperature with the proper amount of humidity at all times.

I have given a few causes for bad running work, all of which are probably well known by all spinners. Sometimes when one sees things like this in print he will start a systematic inspection which will do his room a lot of good.

A. C. B. (N. J.)

The Overseer of Carding.

EDITOR COTTON:

The overseer of carding is the man behind the gun. He has to get the production through before the spinning can run, and he needs the help of his grinders, his section men and all of his men, if the spinning department continues to function. If his production lags behind and falls down, it will not be long before the spinning department will be running short time. My advice to the help is that they get busy and get ahead on their jobs. If the spinning has to stop many times, I will be frank, the mill will still have a boss carder, but he will be a new one, which may not be as popular as the old one, for he might run his job. He might not carry on as much fun as the old one. Another thing, he might get rid of the help, one by one, that is, if the jobs are not run satisfactorily. Such things do happen around mills, and if one does not cooperate with one's boss, there are always others who will, so why should not the help stay on their jobs and try to run them accurately and keep the old boss.

If the carder will do his duty and preach cooperation and practice, I think it will be found that the quantity and quality will never be missing.

J. T. D. (MISS.)

Book On Color Matching.

Exact Colour Matching and Specifying, is the name of a book recently published by the Technological and Industrial Service, 41 Avenue Gambetta, Paris, France. The author, L. Blin Desbleds, has presented in a co-ordinated and self contained form, the valuable and efficient industrial method of acculate color measurement and of precise color-matching, made possible by Toussaint's photo-electric photo-colorimeter. The price of this book is one dollar per copy.

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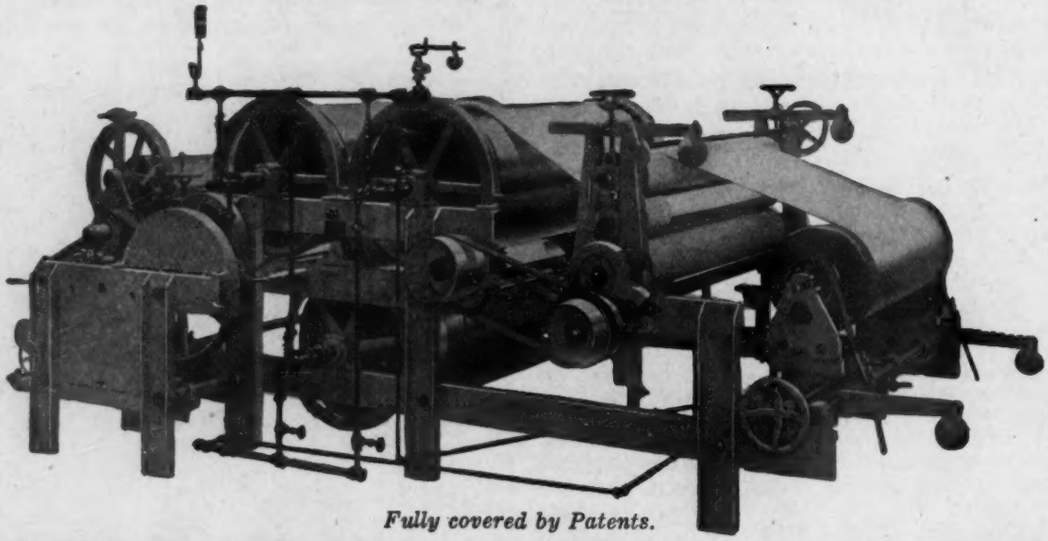

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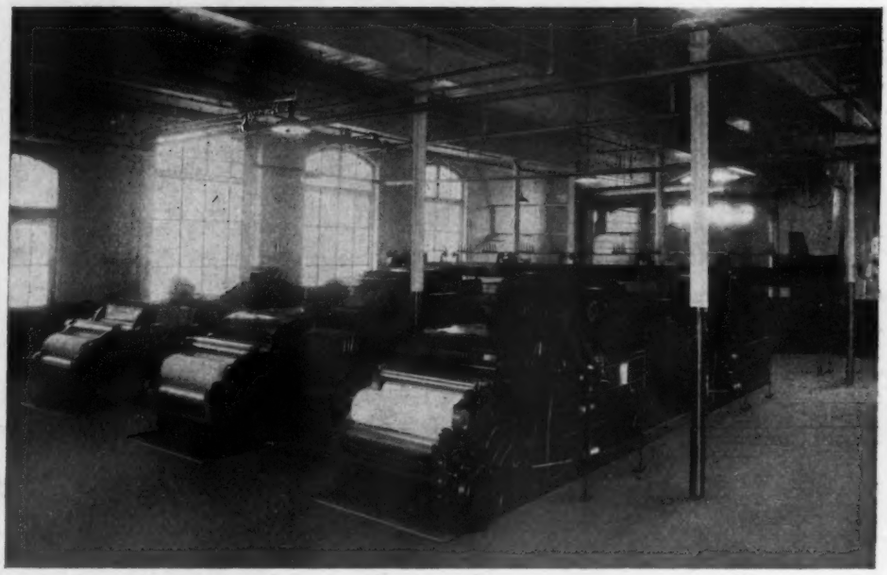
Charlotte, N. C.

Woonsocket Duplex Picker

AFTER several years of experimenting, the Woonsocket Machine & Press Company, Woonsocket, R. I., has perfected a new machine known as the Duplex picker, which combines all of the picker room processes into one operation, eliminating the breaker, intermediate and finisher. The Duplex picker consists of two separate units, known respectively as the feed section and the delivery section, which are the same in construction except for the method of delivery; the first section deposits its cotton from an apron into a hopper on the second section and the second section delivers the cotton in the form of finished laps. This picker is not a rearrangement or grouping of pickers of the old style, but a new specially designed unit.

The company states that the greatest advantage gained by the Duplex picker is that of evenness, and the resulting improvement in the subsequent processes throughout the mill effected by starting with a thorougly even lap. Another advantage of the single process picker is the savings effected by the elimination of help in the picker room, this item alone sometimes amounting to 50 per cent. There is also a saving in floor space, and in the amount of power required. It should be noted, however, that the benefits afforded by the new picker does not rest entirely in the advantages of a single process. The machine is of radically new design in several of its features. There is little possibility of the laps splitting at the cards and less waste is made. It has been shown that, with the exception of the first lap or two in the morning, it is possible to keep the lap variations within one half pound during the day.

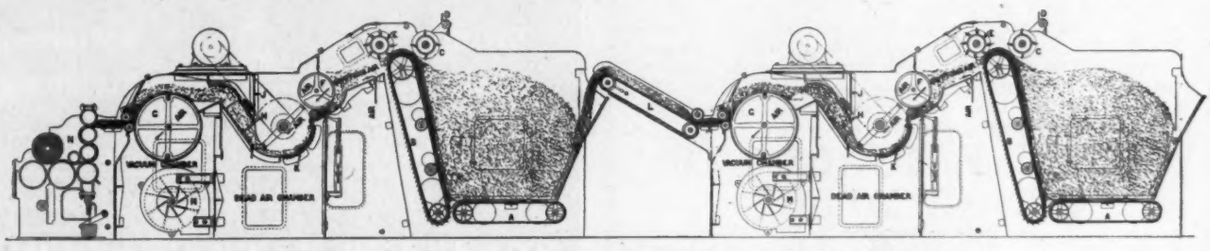


Woonsocket Duplex Pickers Installed at the Pilgrim Mills, Fall River, Mass. "The first complete equipment of single process pickers in America."

A small condenser cage has been installed between the hopper and beater; this condenser cage is 12 inches in diameter and is so arranged that only one half of its surface is exposed to the cotton. This cage is so designed that the air will have to pass through the cotton before it gets to the screen. This is possible with the small diameter as the cotton is easily distributed over a small surface. By forcing the air to be drawn through the cotton much of the dust is removed and the cotton is properly conditioned at the same time. The screen also acts as a preliminary evener before the cotton comes in contact with the evener pedals. Air is drawn from the room into the machine through a slit in the bottom of the passage between the hopper and the beater. The air is drawn through the cage and beater section and out through a large screen in the front. The air entering the picker from above the beater instead of up through the grid bars makes it possible to have a dead air space under the beater section. With this arrangement the motes and fly fall to the bottom and are not drawn back into the cotton, it is explained.

The most radical change made in the design of the picker is the use of only one cage section at the front of the machine instead of the customary two sections. Elimination of the screens does much to prevent the laps splitting on the cards, as the cotton is fed in one solid sheet to the screen. The air is drawn through the entire width of the screen located in the center of the air chamber below. The fan used is of the blower type, but in this case it is used as an exhauster; there are no dust flues between the fan and the cage.

The beaters used in both sections of the picker are of the two blade type. The beaters are set further from the feed rolls than is usually the case, and they are adjustable so that if the need arises they can be adjusted to suit the staple of the cotton being run. The object of the open setting between the feed rolls and the beater is to make the blow of the beater more gentle and to



Showing the features of construction of the new Duplex picker.

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SECTION BEAM

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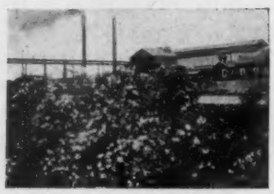

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give it a fanning action. The cut-off plate is adjustable so as to allow for any changes in the setting of the beater. The grid bars are so made that they can be conveniently adjusted from the outside of the machine. The first six of these bars directly below the evener pedals are adjustable as a group or unit, the spacings between these bars becoming gradually smaller from the first bar to the last one. The other eight grid bars are also adjustable as a unit. The spacing between these bars is uniform.

Both the feed section and the delivery section of the Duplex picker are equipped with evener motions of the piano-key link type. It was found that by having both sections of the picker equipped with an evener motion, more uniform laps were produced. By keeping the cotton in the hopper section of the delivery picker at a constant level it was found to greatly aid the evener motion of the picker. The lower cone is allowed to ride lightly on the belt in order to take up the slack, and is so counterweighted as to afford the desired tension. Universal joints make possible the drive through the swinging bottom cone. The driving mechanism is so arranged that its work is lightened to such an extent that a light and narrow belt can be used on the cones; this makes for further accuracy of the evener motion.

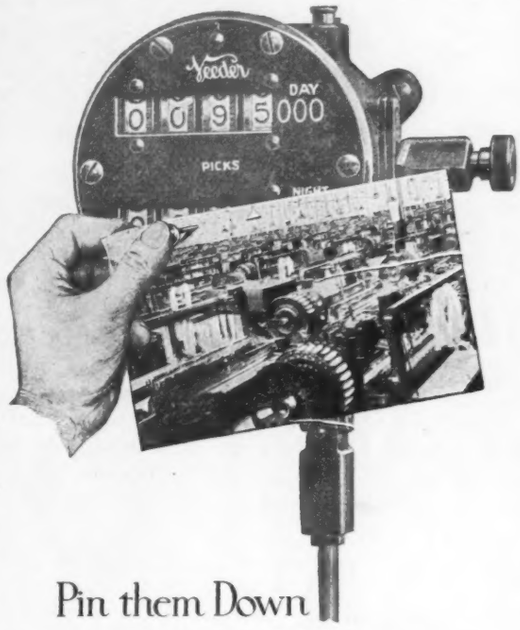
By eliminating the lap feed on the finisher picker, it is pointed out, many uneven places in the finished laps are eliminated where the laps are pieced up or run out and were such that the evener motion could not take care of them. Due to using only one condenser screen on the picker, all the dirt is drawn to the lower side of the laps, and when the laps are fed into the card the dirty side of the lap unrolls next to the feed plate. The starting of the picker is controlled by a lever located by the calender section of the finisher picker. The knock-off is controlled by a knock-off gear which is quick and positive in its action.

SKF ball bearings to a total of 24, are used on all high speed shafts. All bearings are of the self-aligning type, and the housings may be easily taken out and worn bushings replaced. The condenser screen is fitted to the sides of the passage in such a way as to allow no rough places to cause uneven selvages on the laps. Another benefit secured by having the hopper section between the two pickers, the company states, is that it gives the cotton a better chance either to absorb moisture or to dry out, thus helping it to reach its proper moisture content.

A new distributor of the rake type, has been constructed for use with the Duplex picker. A long trough is suspended from the ceiling over the hoppers and as the cotton falls from the condenser into the trough it is pushed along the trough by rakes fastened to a chain. There are chutes extending down from the trough into the hoppers. When the chute is filled with cotton the rake pushes it along to the next chute. The unique part of this machine is that no belts or gates are used in its operation, and the cotton is always kept at a definite level in the hopper.

Morse Flexible Coupling.

The Morse flexible coupling, a new coupling manufactured by the Morse Chain Company, Ithaca, N. Y., consists primarily of a Morse chain wrapping two sprockets, each one-half the width of the chain, one with guide grove in center of face to hold the chain in place, the other with no guide grove and free to float under the chain. The chain fits loose enough on the sprockets to take care of misalignment and lack of parallelism, it is stated.



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The Yarn Market

Philadelphia, Pa., Nov. 17th, 1928.

THE month preceding this writing found the Philadelphia cotton yarn market in the most optimistic mood it has enjoyed in many months. The buying has been of the "hand-to-mouth" variety, the buyers only taking what is required for their immediate needs and are running the risk of paying higher prices at a later date. The orders being placed are for small lots only, but the number of orders is such as to cause a fairly rapid turnover in the stocks. There is a hesitancy on the part of the majority of the buyers to commit themselves for the first quarter of 1929. Very few orders have been placed for delivery in the first quarter of the coming year. It was thought for a while that buying was being held up until the election was over, but now that it is behind us, the small orders still persist. The Government estimate of slightly over 14,000,000 bales had very little effect on the cotton yarn market. The spinners have eliminated the question of large stocks of yarn by very careful curtailment, the stocks have been kept low and are replaced only as orders come in. Combed yarns are firmer than they have been for sometime, the spinners are raising their prices and are holding out for them. There have been times this year when the price of combed yarns, on some numbers, was so close to the price of carded yarns that the buyers were buying combed yarns and raising their grade of finished goods.

The first week of the month recorded here found the yarn buyers showing their intention to confine their purchases to "filling-in" orders, at the risk of having to give more for the yarn later on. Covering with yarns through November and largely through December, it is stated, was fairly general prior to last week. This is also about the extent to which manufacturers have booked orders for cotton goods, according to the yarn men. The season has progressed normally, dealers say, when business and other things are considered. Much of the buying now current in the market is for yarns for immediate use. Market stocks are being continually drawn on for small-lot shipments and stock yarns from the South are being moved continuously in this way. Market interests are, of course, replacing the yarn stocks as this must be done to continue to give service to customers.

The second week of the month found the price of carded yarns changed very little in any respect. The carded yarn average price, which has advanced for five consecutive weeks, appeared at the moment likely to remain stabilized until there was some new, important change in cotton quotations. A considerable number of local yarn buyers, however, increased their production during the past six to eight weeks, some going onto night work, and this has kept them coming into the yarn market more frequently. There is practically no "stock situation" in the carded yarn business, as unsold supplies both among dealers and spinners are comparatively small. The spot supplies held by the dealers for their customers, who underestimate their requirements, are by no means as large as used to be considered normal.

The third week of the month found the combed yarn spinners endeavoring to "trade up" in their branch of the industry. They not only braced up the price of combed yarns, but indirectly they took the pressure off of some of the carded yarns as the change in price took away some of the competition in the finer counts. For a considerable period combed yarns in certain counts had been so low in price that consumers ordinarily calling for corresponding counts in carded yarns could, for a few cents a pound more, obtain combed yarns and improve their product.

The fourth week of the month found conditions surrounding supply and demand very little changed. Few consumers appear to be interested in arranging for yarn supplies beyond the end of the year. There was some talk of small lots being offered on the market at prices lower than the spinners would even consider, but such lots are said not to be regarded seriously by the spinners, who believe the amounts so offered are exclusively small lots and do not represent low priced competition from other yarn mills.

Philadelphia prices on Nov. 15th, follow:

Single Skeins.

4s to 8s	32	10s	32
12s	33	14s	33½
16s	34½	20s	35½
24s	37	26s	38
30s	39		

Two-Ply Skeins.

8s	32	10s	32
12s	33	14s	33½
16s	34	20s	35@35½
24s	37	26s	38
30s	39@39½	40s	46

Single Warps.

10s	33½	12s	34
14s	34½	16s	35
20s	36	26s	39
30s	39½	40s	46

Two-Ply Warps.

10s	32½	12s	33
14s	33½	16s	34
20s	35½@36	24s	37
26s	38	30s	39½@40
40s	47		

Frame Spun Carded Yarn on Cones.

8s	31	10s	31½
12s	32	14s	32½
16s	33	18s	33½
20s	34	22s	34½
24s	36	26s	37
30s	39	40s	45
30s dbl. carded	40	30s tying in	37

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	43@44	20s	45@46
24s	47@48	30s	49@50
40s	52@54	50s	57@58
60s	60@63	70s	73@77
80s	84@87		

Single Combed Peeler Yarn on Cones.

18s	42	24s	46
30s	48	36s	50
38s	51	40s	52
50s	55	60s	60
70s	72	80s	82

Mule Spun Carded Yarn on Cones.

10s	37	12s	37½
14s	38	16s	38½
18s	39	20s	39½
24s	41	26s	42
30s	43	40s	51

Mule Spun Combed Peeler Yarn on Cones.

10s	43	12s	44
14s	45	16s	46
18s	47	20s	49
22s	50	26s	51
28s	52	30s	53
36s	56	38s	58
40s	59		

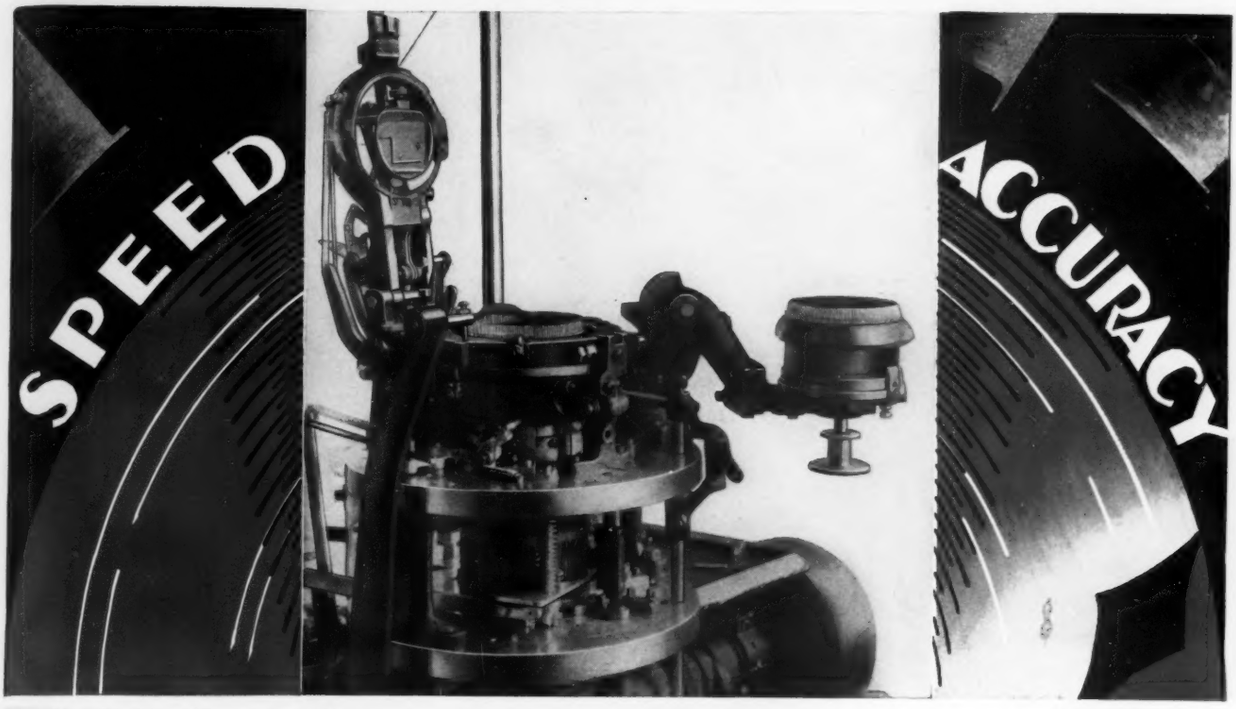
Carpet and Upholstery Yarn in Skeins.

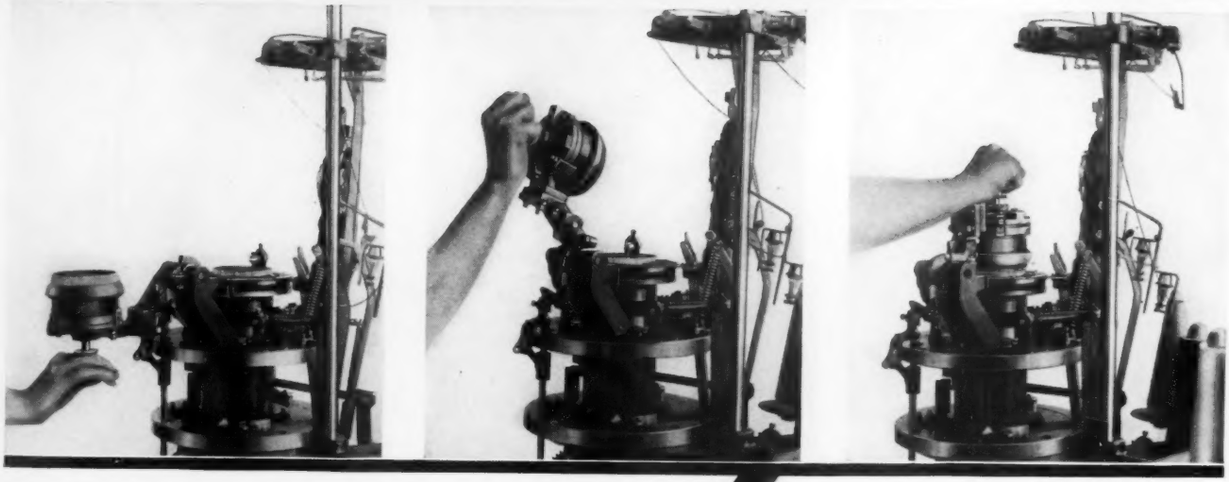
8s and 9s 3-4 hard white warp twist	31@31½
8s and 9s tinged tubes	30
8s 3-4 hard twist waste	30

Aberfoyle Manufacturing Company Moves Offices.

Aberfoyle Manufacturing Company, mercerized yarn department, announce the removal of their offices from Bankers Trust Building, to 123 South Broad Street, Philadelphia, Pa.

Knitting Section





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Testing Mixing and Applying Dyestuffs

Changed Conditions of Requirements Make Necessary More Modern Methods of Control and Operation in the Dyehouse

By Noel D. White

Article Sixteen of a Series on "The A B C of Dyeing"

THE MAN who selects dyeing as his vocation, upon entering the dyehouse, whether he be a graduate from a dyeing school or an apprentice seeking to learn a trade—will find that the most exacting part of his duty is the matching of colors and the making up of formulas continually and everlastingly. He also will find that as soon as he has learned to dye a given shade correctly and easily, fashion has changed and he will have to start all over again and learn to make another one. Some shades last a long time, maybe a year or so; others last but a few weeks. In some cases as in the dyeing of woolen fabrics, fashion changes with the season and very often the same shades carry over from Spring until Fall, but never from Winter until Summer, and of course that is right in line with progress.

If it was not for that we would soon grow stale, and the work monotonous, dyeing the same shades every day of the year. As it is we are on the jump most all the time, continually changing and trying to outwit nature and produce better, faster and more beautiful colors.

There was a time when all dyeing was sent to a dyehouse where they made a specialty of dyeing some particular fiber and all problems were left to them. There were dyehouses where silk was dyed exclusively, others made a specialty of dyeing cotton, while others only dyed wool; a few took in any fibers and most everything was dyed in yarn to be woven or knitted afterwards. Very few mills had dyehouses of their own, and those that had were large mills and could afford to pay for a good dyer, and maintain a well-equipped dye-house. Also, in those days dyeing was a complicated affair, the dyer had to prepare his own dyes in addition to applying them, and that knowledge was usually kept in the family jealously guarded.

When coal tar made its appearance in the field, and made dyeing comparatively easy, the mills with moderate means found it possible to do their own dyeing instead of sending it out to the commission dyers. The newly discovered dyes sealed the doom of a number of families that for generations had held sway in the production of dyed yarns. Their secret formulas had now become obsolete, useless.

Weighing dyestuffs on an apothecary balance. Note the glass case enclosing the balance. When not in use the front glass is lowered as a protection against moisture and acid fumes which are an unavoidable evil in any dyehouse or laboratory.

Now, however, another form of dyeing was coming into prominence. Whereas up to this time most dyeing was done in skeins very little in the piece except redyeing garments, now with the new, easily applied dyestuffs some material was found more convenient and economical to dye after it came from the loom or the knitting machine, and the keen competition between the manufacturers made them resort to mixing cotton with wool or either one with silk. Then the chemists, like the alchemist of the Middle Ages, set about to transform the lowly cotton into a more pretentious fiber and evolved a different and beautiful fiber that today has taken the country by storm, and again dyeing has become a complicated affair. Dyeing the new and mixed fibers together in the cloth is not so easy as dyeing the individual fiber alone.

Here the dyestuff manufacturers and dealers came to the rescue in order to help the small mills (the bigger ones could take care of themselves), and offered to take over their trouble, match their samples for them, selling them the dyes already mixed to dye their different colors and mixture of fibers. For a while this went on well enough because little regard was paid to good matches, everything that was near enough was good enough and accepted, but when good matches were requested and insisted upon, the inexperienced dyer found himself unable to improve his work. An army of trained demonstrators were sent out to help and give instructions to these dyers, how to correct their shades, their union, and doctor up their mixed dyes. After awhile it was reasoned that if to a given mixture of dye stuff so many additions had to be made in order to obtain the right shade, there was no use in having a ready mixed dyestuff to start with. The dyer could just as well make his own mixing right from the start. Most dyestuff dealers at the present time discourage the practice of selling mixtures, and prefer to let the dyer buy straight colors and do his own mixing. They take the samples, decide on what it takes to match it, then give the formula in percentage of the different dyes it takes and the dyer does the work. While in this case an experienced dyer may not be absolutely necessary for the small mill where the price of

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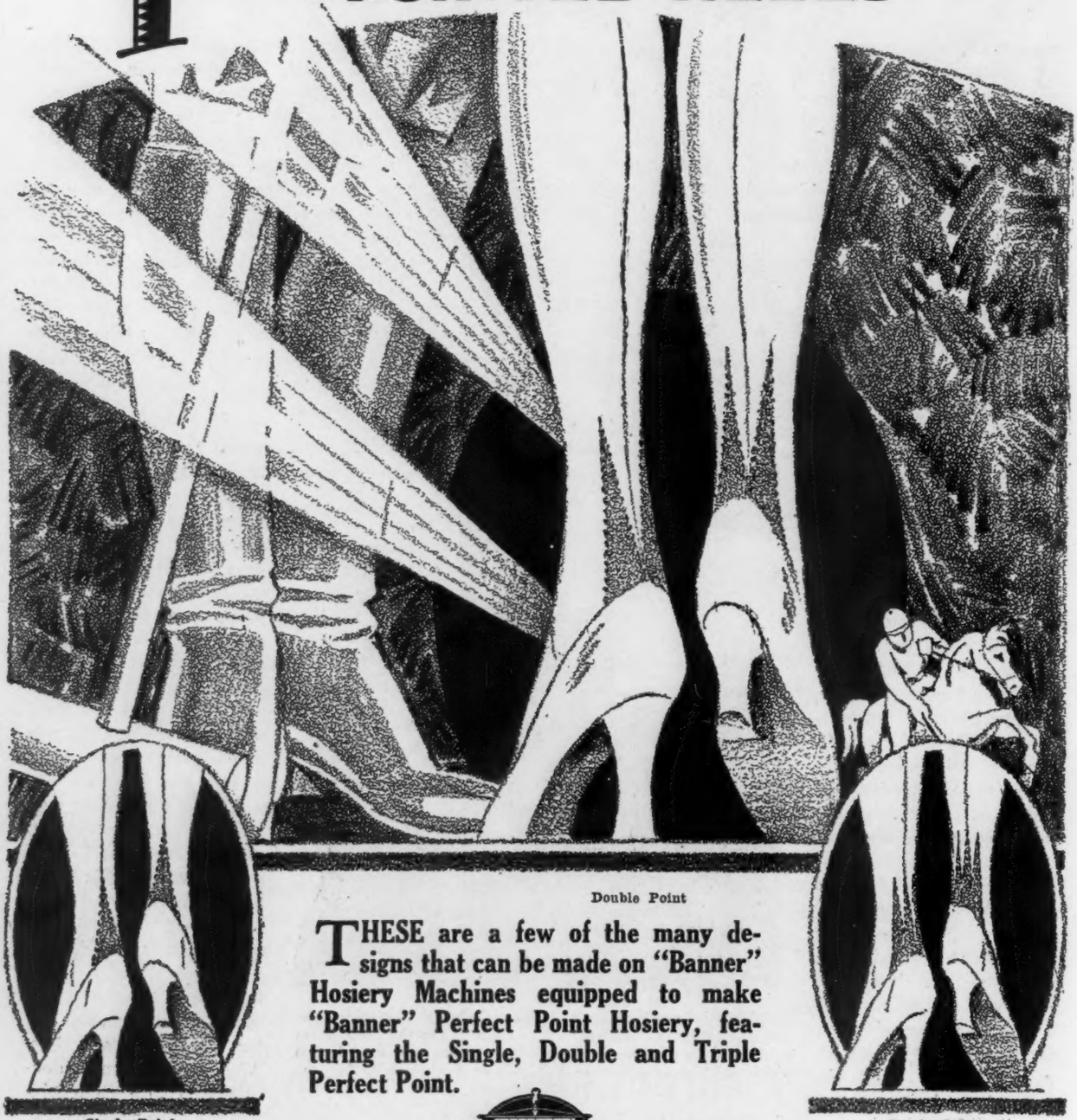

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one could hardly be afforded, a beginner with a textile school education should be employed and made to learn practically what he has studied in school. A school-trained youngster will soon learn to put to practice his learning and become proficient in his chosen work.

Fortunate indeed is the student who can start in his work under some old head dyer for in that case he would have some one to appeal to in his perplexities to lead him over the rough spots. Under his directions he could get the benefit of the older man's experience without shouldering the actual responsibility of the work, and devote his mental energies in accumulating the necessary knowledge to carry on the work in later years.

But in the majority of cases this is not possible because the small mills cannot afford to pay for a good dyer and have an understudy as well, and in many cases the older experienced man will not take on a beginner to train, because his experience or narrow-mindedness, will make him fearful of losing his job when the younger man has learned enough to carry on the work.

It is with the idea of helping this latter class that this is written: to show how to start in testing out dyestuffs, to mix them together in different proportions to obtain different shades on one or several fibers and materials, to select the most useful dyestuffs for a given purpose and to apply dyestuffs to the best advantage to get the most out of them for the desired purposes.

WE ARE PLEASED to announce the resumption, with the accompanying article, of Noel D. White's intimate and practical discussions of dyehouse practice. A previous series, "The A B C of Dyeing," which was prepared by Mr. White, appeared during the latter part of 1927 and early months of 1928, in the Knitting Section of COTTON.

There have been many radical changes in conditions, which have occasioned radical alterations in dyehouse practice among the knitting mills. In this article Mr. White calls attention to some of the new demands and requirements, and gives sound, practical suggestions on the subjects discussed.

In the next article, to appear in the January or February issue, he will discuss correcting a shade in the beaker, and in the machine.

Setting Up a Laboratory.

An elaborate laboratory is not essential. A small room equipped with a ½ inch steampipe and a ½ inch pipe for running water, and a water heater is necessary to heat the pots where the testing of dye stuffs and the mixing of them to make sample shades are to be made. The water heater may be bought ready to set up, or may be made to order by a coppersmith. It should be of copper or monel metal for lasting quality, but it could also be made of galvanized iron if wanted only temporarily and of course the pots could be heated directly over gas jets or bunsen burners. A water heater, however, is recommended as the most practical and convenient—one with a number of holes in the top to insert the pots. Pots have to be of different capacity; some of one pint to test dyestuff, others of one quart for dyeing one stocking or a larger piece of fabric, and up to one gallon capacity for two or three pairs of stockings. This, of course, is regulated by the quality of the work one intends to perform in his laboratory.

The water heater should have a closed copper or brass coil on the bottom for steam. When full of water and the steam turned on, it will boil in a short time. A pot, with the required amount of water for a bath, inserted in the top of the heater will come to a temperature of 200 degrees F., which is not enough for most purposes. If a higher temperature is desired for some special requirement, a scoop of common salt or saltpeter, or some glycerin or calcium chloride added to the water bath will raise its density, and cause the temperature of the bath in the pot to raise to very near the boiling point.

Pots can be of porcelain, glass, or enamelware. The latter are more practical as not so easily broken. In some cases it is necessary to have copper or monel metal, and iron pots to make tests of dye stuffs which are affected by the different metals like sulphur, vats and some chrome colors. A small thermometer should be on hand and a few glass rods to handle the material in the dye bath. Some graduates of different dimensions; one with a reading scale of 1 to 5 c. c., one with the scale reading up to 25 c. c., and one measuring 100 c. c. should be sufficient. Several quart bottles, and finally a small scale or balance sensitive enough to weigh accurately as little as one centigram. This should be inclosed in a glass case for protection against the fumes and moisture that are unavoidable evils of any dye plant, and should be kept closed at all times when not in operation.

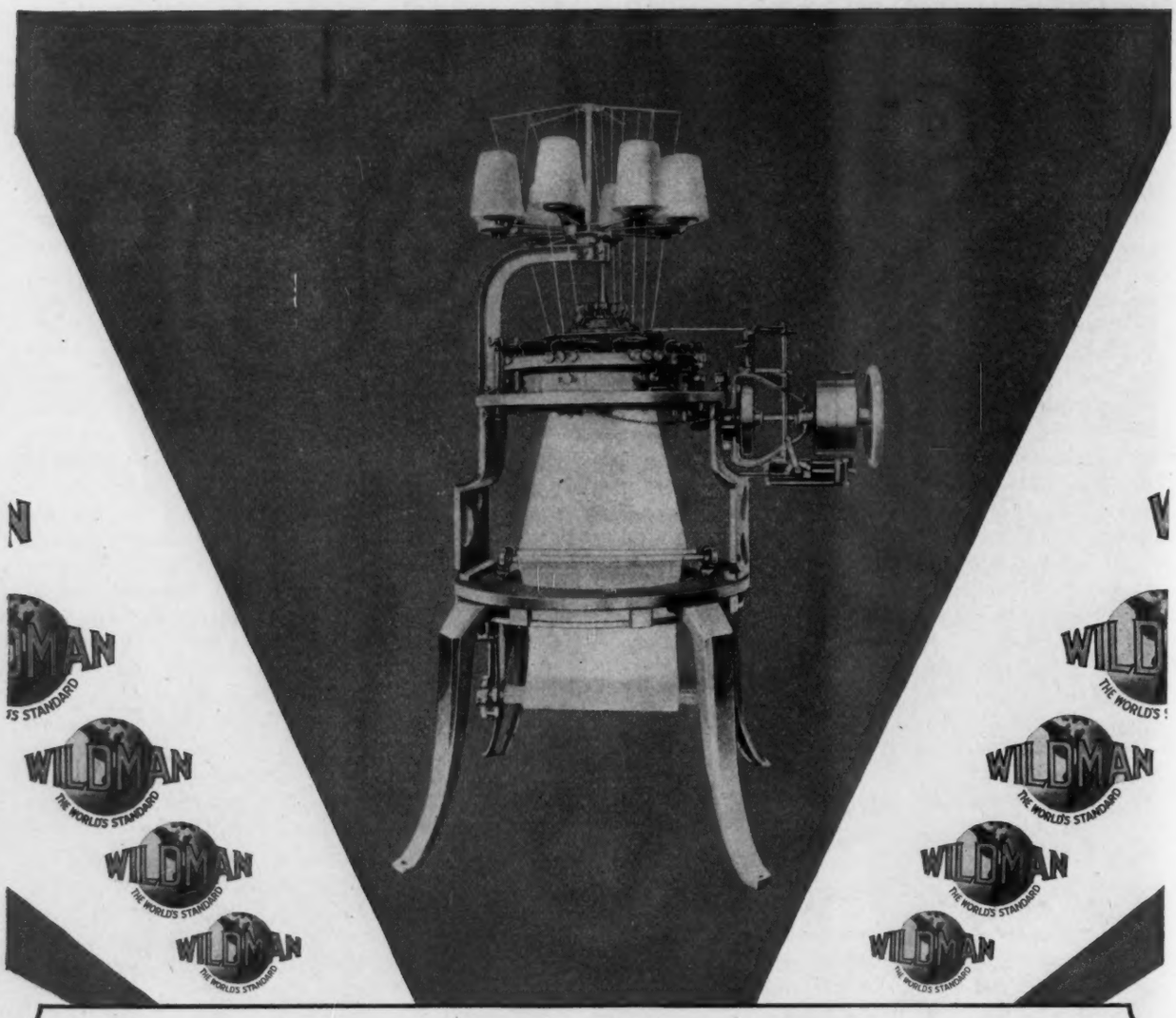
The weighing of dyes for testing and making samples should be done with the metric system weights. A set of weights from one c. g. to fifty grams should be a part of the equipment. Calculations are more easily done with it, formulas may be transformed in ounces and grains after percentages are arrived at by using a dyer's percentage chart, which can be obtained on request free of charge from most dye dealers.

For experimental purposes a bunch of scraps of the material manufactured in the mill is taken and prepared as for dyeing. In the case of silk hosiery where cotton, silk and rayon is used, the scraps are boiled off, washed and dried. A bunch of them is usually kept ready to use when needed to test new dyes, or to match new samples. A beginner should select from dyestuff sample cards some direct, neutral, and acid dyes to experiment with, find out their tinctorial strength in different proportions; how they behave with the different fibers; at what temperature they dye best, and how the best union is obtained.

Several dye tests are made using 1-4 per cent of dyestuff, then 1-2 per cent, then 1 per cent or more. Hard and fast rules cannot be gievn because some dyes work better on dark shades, while others are best suited for light color. The dyer will soon find out how to select by actually testing in the laboratory. For testing dyestuffs the scraps should be cut in pieces to weigh 10 grams for convenience in calculations, taking care that the fibers are equally represented in the piece. For matching samples usually a whole stocking is dyed. This must be weighed correctly to be able to figure the right percentage of dye stuffs used in dyeing it. If other material is to be dyed, the dyer can use his judgment on the size of the swatch but the weight of it must be found and the work is simplified by testing always with the same amount of material.

The thing to keep in mind in testing is to learn to select the dyes most suitable for the work on hand. For instance: cotton and silk are in the material to be dyed, in this case dyes must be selected which will dye these two fibers as near alike as can be found. If rayon is also present, then the dyer must select among the dyes that will col-

(*Continued on page* 220)



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SPRING NEEDLE BODY MACHINE

Lay-Out of a Modern Full-Fashioned Mill

By C. H. Baxter

Article 2 in a Series Covering Full-Fashioned Mill Subjects

Details for Building and Arrangement of Departments and Machinery for Plant with Plant of Average Productive Capacity

RECENTLY in figuring out a proposed addition to our hosiery mill, it occurred to me that the lay-out of a new hosiery mill is indeed a problem, and especially so for anyone who has had no experience in hosiery. In starting a new plant, this problem is even greater, and as a rule, many mistakes are made.

In building a new mill for full-fashioned hosiery manufacturing, many things must be thought out, to be sure that the mill will be as ideal as possible. First, the size of the lot of land must be considered, then the size and kind of building that is to be constructed, and last, the kind of equipment to be used and the layout of same.

In writing this article, it is not my intention to show the readers what is an ideal layout, but merely to give my ideas of what I would consider as a proper building and lay-out, if I were to start in the full-fashioned hosiery business, with but one thought in mind, that some of my ideas may be helpful to others who are planning to enter into the hosiery field.

In starting a hosiery mill, the main problem to begin with is the finances, especially as to what it will cost to start. Therefore, in starting a new concern, I would want to be assured of enough money to begin with, so that I could have a fairly good-sized mill. Bankruptcies in full fashioned hosiery mills are mostly due to the fact that a concern starts with a small capital and the profits, on a small production, are eaten up by a big overhead.

So when one has enough capital to start, the first problems are as to how many knitting machines to start with and the kind of mill to build. I will, therefore, say that I have enough capital to start in the full-fashioned hosiery business, and shall make my plans for such a business.

How Many Machines?

The first problem to be considered is the number of knitting machines to purchase, and the gauge and sections wanted for each machine. I would not consider starting with less than twenty-four machines, as with less than that number, I could not make a good profit. In order to get production, which is very necessary to make a profit, I would buy 24-section leggers and 24-section footers. Some will argue that 20-section footers should be purchased, so that only two toppers are needed, but I find that by having someone else do the creasing of the heel, that a girl can top twelve bars as well as ten bars. As it is always necessary to have one or two learners on topping, as well as spare toppers, the slower production girls could top ten bars each and the learner four bars. It is the knitting machines that give the production, and the topping question should be solved by the management.

What Gauge Machines?

In reference to gauge, I would purchase 45-gauge machines, as the trend of the business is leaning towards finer gauge machines, and I believe that a 45-gauge machine is the most flexible machine to use today. On a 45-gauge machine a very fine chiffon hose can be made, and if a service-weight is required, this can also be made on this machine.

I might also add here that, if I already had 42-gauge machines and was installing additional equipment, I would install 48-gauge machines. The reason I would do this is because there is little difference between 42 and 45-gauge, and I would use 48-gauge for a fine high-grade chiffon and 42-gauge for service weights.

My next problem would be the building of a mill, and before proceeding further, I have made a plan, showing a lay-out that I will use to illustrate my ideas. This is shown in the sketch on page 209.

Description of Building.

The building I would construct would be a one-story building, with no basement or cellar, and the inside measurements should be 96 feet wide and 180 feet long. The building would be built so that a second story could be added when expansion would make it necessary. For lighting purposes, I would construct what is called a day-light building, using many windows on the sides of the building, but would have a flat roof, with no skylights.

The reason I would not use skylights is, that I find this method of lighting very poor for full-fashioned hosiery machinery, as it reflects and conducts heat and causes contraction and expansion of knitting machines. The overhead light is also bad for the eyesight, and causes the employees to have trouble with their eyes.

The reason for building without a basement is for the purpose of having a solid floor for the knitting machines, so as to eliminate vibration and prevent the machines from getting out of level. For the floor, I would have a concrete base, with a wood floor laid on the concrete. Walking or standing on concrete is hard on the legs and feet, and therefore, I would lay a wood floor to make it comfortable for the employees.

The heating plant I would put into a separate building, in the rear of the main building, and a dyehouse could also be built in the rear, if necessary.

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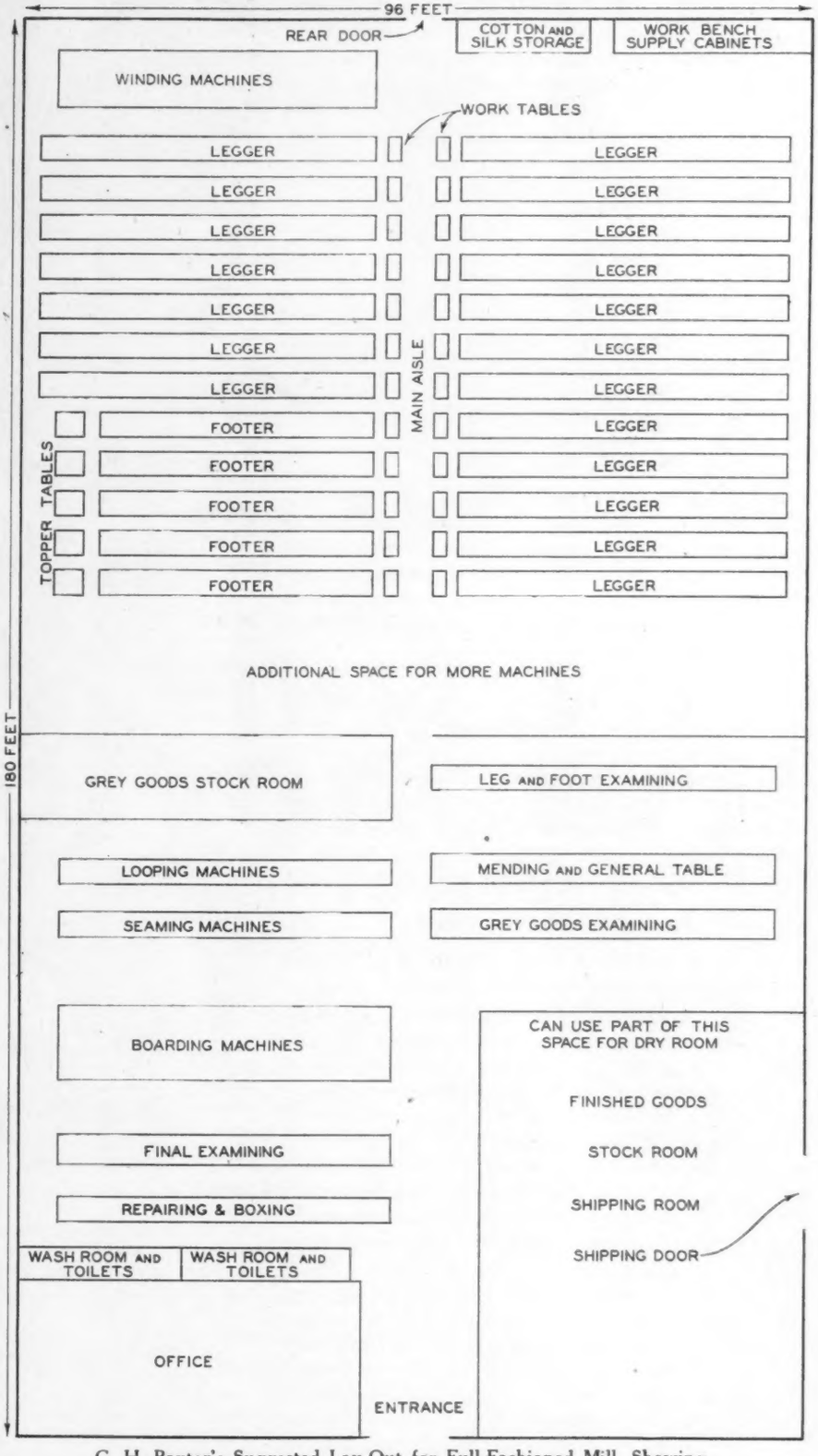
After the building has been completed, my next problem is to make my lay-out of machinery and equipment. First, I must decide as to the number of leggers and footing machines I must have. In my first unit of 24 machines I would install 19 leggers and five footers. Of course, if I should decide to operate my legging machines day and night, five footers would not take care of the legging production. In my plan, therefore, I have left space for additional machines, so that I could install more footing machines to take care of the night production of legs. Knitting machines are usually ordered as three leggers to one footer, but one 24-section footer of modern construction should produce more feet than the production of legs from the 24-section leggers.

I would figure that I would receive about an average of 1,050 to 1,100 dozen legs weekly from nineteen leggers on a day time operation, and five footers should be able to foot this number of dozens of legs. Production will vary according to conditions, the ability of the operators and the number of hours of employment. After the first installation of twenty-four machines, one will be able to tell just what additional machinery is needed, based on the production now made, so it is necessary to have additional space for this purpose.

The reader will notice on my plan, that the knitting machines are placed in two rows, one at each side of the building. In the rear of the building, I have space to be used for winding machines, cotton and silk storage and work-bench and machine shop. For this purpose, I would have the space 15 feet wide from the wall to the first knitting machine. The reason for this is that making it 15 feet wide, enables me to place two more knitting machines in the space on each side of the building, should I ever have need for them.



C. H. Baxter's Suggested Lay-Out for Full-Fashioned Mill, Showing Arrangement of Machines and Departments.

Before proceeding further, I want to say that in a lay-out of a full-fashioned hosiery mill, I would avoid having crowded conditions. In the installing of all machinery, as well as other equipment, I would allow plenty of aisle space for the comfort of the employees.

The length of a 24-section legger of most make machines

is 41 to 41 1-2 feet long. The legging machines I would place 1 1-2 feet from the wall. The aisle between the front of two machines I would make three feet wide from hand-wheel to hand-wheel. The aisle space in the back of machines, I would make 15 inches wide. This is ample aisle width and gives fine working space for the operators. The front aisle space of footing machines, I would make 3 1-2 feet wide, as more room is needed for footing than for the legging operation. The main aisle of a building 96 feet wide, after placing leggers as shown in the foregoing, would be from 6 to 6½ feet wide from work-table to work-table.

The length of a 24-section footing machine is 36 feet, and by placing the end of the machine in line with the legging machines in the main aisle, the toppers can be placed near the wall and windows. This gives the toppers the best light, and will result in better work being done.

Uses Steel Tables Throughout.

For the knitters' work-tables and the toppers' tables, I would use steel tables only, and in fact, all tables, such as examining, pairing and general work-tables, would be constructed of steel. The reason for this is that rough places cause pull-threads in hosiery, and wood construction, even with the best of care, will soon become rough or nicked, and will cause pull-threads.

On my plan the reader will note the gray goods stock room. This, I have placed in the center of the building, and in such a room I would store legs, goods footed, looped, seamed and examined, ready for the dyehouse. I would enclose this room in wire partition and would make it 45 feet long and 12 to 15 feet wide. Steel bins would be placed in the center of the room and steel tables on the sides. I would have openings on each side large enough for the receiving and delivering of all work.

Storing the Goods in Process.

This room is very important, as a system of checking must be made somewhere, and this is the place where the check should be kept. By placing this room in the center of the building, the stock can be controlled for all operations of gray goods.

The next equipment to buy is the seaming and looping machines and the tables for same. For a production of 1,100 dozen weekly, I would require eight looping machines and eight seaming machines. It is quite possible that this is either too many machines or not enough, but this I would have to determine after I was able to find out what the productive ability of my operators would be on this operation.

For examining tables, I would purchase, to start, at least a sufficient number to make two rows 42 feet long. For examining dyed work, I would purchase two pairing tables for taking care of four girls to do this work.

With reference to the space for boarding machines, I would have to allow enough for the kind of boarding equipment it was my intention to use. As there are various kinds of equipment one can use for the boarding operation, the amount of space depends on the make of boarding equipment to be used.

The finished stock room and shipping room I would combine into one room and have the room partitioned. At one end of this room I would have a separate space for the drying-out of gray goods, especially legs.

The wash-room and toilets, I would place near the office, and this would enable me to have a wash-room in the office. By this arrangement, the plumbing would all be placed at one end of the building.

For heating the building, I would use a high-pressure heating system with the heating coils overhead. With a high-pressure system, the steam can also be used for boarding when the boarding machines are heated with steam. The temperature of the building I would control by thermostats, as evenness of temperature means a great deal in overcoming contraction and expansion on the knitting machines.

As the reader will note, my plan of a building and lay-out is such, that if it were necessary to expand, I could easily add another story to my building and then fill the entire lower floor with knitting machines. The other operators and equipment would be placed in the second-story addition, as additional space for this would be required for the increased production.

In summing up this article, I can only say that in planning and laying out a mill, one must be sure that the lay-out of knitting machinery is correct, as these machines, after they are erected, cannot be moved without involving a great expense. All other machinery and equipment used in the manufacturing and finishing of full-fashioned hosiery can be moved easily. Because of this, it is not a serious problem as to the exact location that this equipment should be placed. However, the size of the building is very important, as when one starts to build, the thought should always be in regard to room for expansion, if necessary. No one, entering into whatsoever business, can tell what growth they may have, so erect a building large enough to take care of some growth and buy enough machinery so that the production will be large enough to make a good profit.

In the lay-out, be sure to avoid a crowded condition, as crowded conditions in any hosiery mill will spoil many pairs of hosiery. Also, see that all operations are placed so that the entire plant is easily supervised, and by doing these things, plus making a good product, there is no reason why anyone cannot make a profit in full-fashioned hosiery.

[This is the second of a series on full-fashioned work by Mr. Baxter. Beginning with the third article, to appear in an early issue, he will discuss in related articles, common manufacturing problems encountered from the arrival of the silk to the boxing of the finished goods.—The Editor.]

Joins Knitting Research Division.

H. E. Shearer, who has been connected with the Textile Section of the Bureau of Standards, Washington, D. C., for the last year and a half, has been appointed assistant research associate of the National Association of Hosiery and Underwear Manufacturers, it is announced by John Nash McCullaugh, managing director. Mr. Shearer will act as assistant to E. M. Schenke, research associate of the association.

Booklet by Wagner Electric Corporation.

The Wagner Electric Corporation, St. Louis, Mo., has just issued a new bulletin describing Wagner large RA single phase repulsion-induction motors. The bulletin is well illustrated and contains a detailed description of every part of the motor. Not only is the motor picked to pieces to make clear to motor users what each part of the motor is for, and why it is made that way, but the publication is also a text book for single phase motors (from the first hand-cranked motor to the present self-starting, self-ventilated type), covering operating principles, sleeve and ball bearing construction, ventilation, and construction features of stator, end plate, roto and rocker arm.

The DEMAND GROWS

for TORRINGTON *Full Fashioned Needles*

THE curtain first went up on Torrington Full Fashioned Needles at this year's Knitting Arts Exhibition. Knitters came, saw . . . and bought.

And what is more than significant, they repeated. Orders were received faster than we could fill them. In fact the demand has been remarkable, even for a Torrington product. It continues to increase. A day-and-night manufacturing schedule cannot satisfy it.

Torrington Full Fashioned Needles are a sensation . . . for they possess the features discriminating knitters demand.

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ESTABLISHED 1866
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reason that a smooth, tightly woven fabrics. And these fabric-qualities are insured by *Torrington Latch Needle* temper, smoothness and uniformity.

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Removing Dry Transfers From Hosiery

EDITOR COTTON:

If some of your readers can give us information reguarding the removal of dry transfers from hosiery feet, we shall certainly appreciate it. We are at present using so-called regular ink, not the indelible nor fugitive transfer. We have been unable to secure either a product, or instructions as to how to remove these transfers; but we have tried to find various solvent chemicals and then stripped in our regular dyehouse process, with very interesting results.

It may be that some manufacturer can give us help along this line, and I am sure that the whole trade would be interested in this subject.

CONTRIBUTOR No. 4087.

Securing Even Strippings.

EDITOR COTTON:

A friend of mine recently submitted to me a problem which presented some interesting features, and because I feel that our discussion of it would be of interest, I am passing along to you herewith, an outline of his problem, together with my reply thereto.

This man sent me two pieces of infants' knitted hose, made of some kind of artificial silk. One of the hose was white, and the other canary yellow. He claimed they were originally the same color, and had been stripped, apparently to be re-dyed in some other more readily salable shade, and he wanted to know why they did not strip the same. It seems that out of the same lot, after stripping, part of the goods came out white and part of it came out yellow. He did not state what color they were originally or what he used to strip them with or how he stripped them.

In my opinion, after looking them over, it is plain that even if they were the same color as he says they were, they were surely not dyed together nor with the same dyestuffs, or they could not fail to strip the same shade. If he used straight colors and combined the shade himself, if he will check up on his dyestuffs, he will find that he has more than one direct yellow in his stock, and one of these is of the kind that will not strip white, and if he uses already mixed dyes, then the dealer who sells him the mixture has used different yellows in his mixtures.

There are a number of dyestuffs which will not strip white, no matter what stripper is used. While they are excellent dyes in themselves, and very good in combination with other dyes, if for any reason they have to be stripped, such colors will remain in the fiber, while the other dyestuff in the combination is destroyed, and that is just what happened in this case.

It is quite clear that in one of the samples submitted, there is a yellow dye that resisted the stripping. In a case like this, the proper procedure would be to separate the different shades, that is, pick out the yellow tinted goods and dye them separately.

A standard line of dyestuffs should be kept in the stock room of the dyehouse—select the best for the work of the mill and stick by them. When a new dye is brought out by any manufacturer, the properties of each new dye are listed, explained and classified, and if it is specified that a dye is easily discharged when used in printing—and most dyes used in dyeing are also used in printing—then it is reasonable to suppose that such dye will also strip easily with most stripping agents. On the other hand, some dyes are declared not to discharge to a clear white, in which case stripping will not be so easy either. The yellow that has remained on part of the goods submitted by my friend, is of the latter class.

The selection of a good stripper is up to the user of it; no two dyers have the same opinion on what is the best stripper even for the same kind of material and fiber. Everyone has his own preference in the matter, owing mainly to conditions in his own premises. Some use stripping powders with good results; others prefer to use liquid strippers, of which there are a number, each with a good claim to superiority. What is a good stripper in one dyehouse may not work so well in another. In my opinion, local conditions have a lot to do with the working properties of the different stripping agents, namely, hard or soft water, the dyestuffs used, the mode of application, the kind of work on hand. Some require an addition of acetic acid to work properly, and others strip quite well alone.

We had an agent come to our place sometime ago to demonstrate what a good stripper he had, but he could not make it work in our laboratory. He told us of several places where his stripper was working satisfactorily. I

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need no conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

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FULL FASHIONED HOSIERY MACHINES

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WEST NEW YORK - N. J.

made inquiries to check up on his veracity and found that he was really telling the truth, but we could get no results with it, because our way of applying the dyes was different.

In another instance we bought some goods from another mill. The goods were dyed the same shades we had in our stock. Later we found it necessary to strip some of the goods and re-dye them a more salable color. We found that those goods would not strip the same as those that were dyed by us. The dyer in the other mill dyes his goods in the boil-off bath, while we dye our goods after they are boiled off and washed; hence the difference.

D. N. (TENN.)

A Check-Up on Cylinder Cleaning.

EDITOR COTTON:

Unless there is a systematic method used for keeping account of the cylinders cleaned in a seamless hosiery mill, it is confusing as to exactly what has been done, to a certain machine and how long ago it was done. We worked out a layout of our department, which consisted of 16 machines per set, eight on one side and eight on the other. As the cylinder cleaner was through with a cylinder he would mark down on the report in its proper place, the nature of the job and the date. This report enables us at a glance to see what machines were cleaned and which need cleaning the most. Before we made out this report it was always confusing to us to remember just how long it had been since a particular machine was cleaned and the nature of the job. As our department consisted of 300 machines, we found a report of this kind to be valuable.

This lay-out is mounted on a flat board, hung on the wall where it can be seen by all. The form used is shown in the accompanying sketch, which, with the code, is self-explanatory.

RYMI.

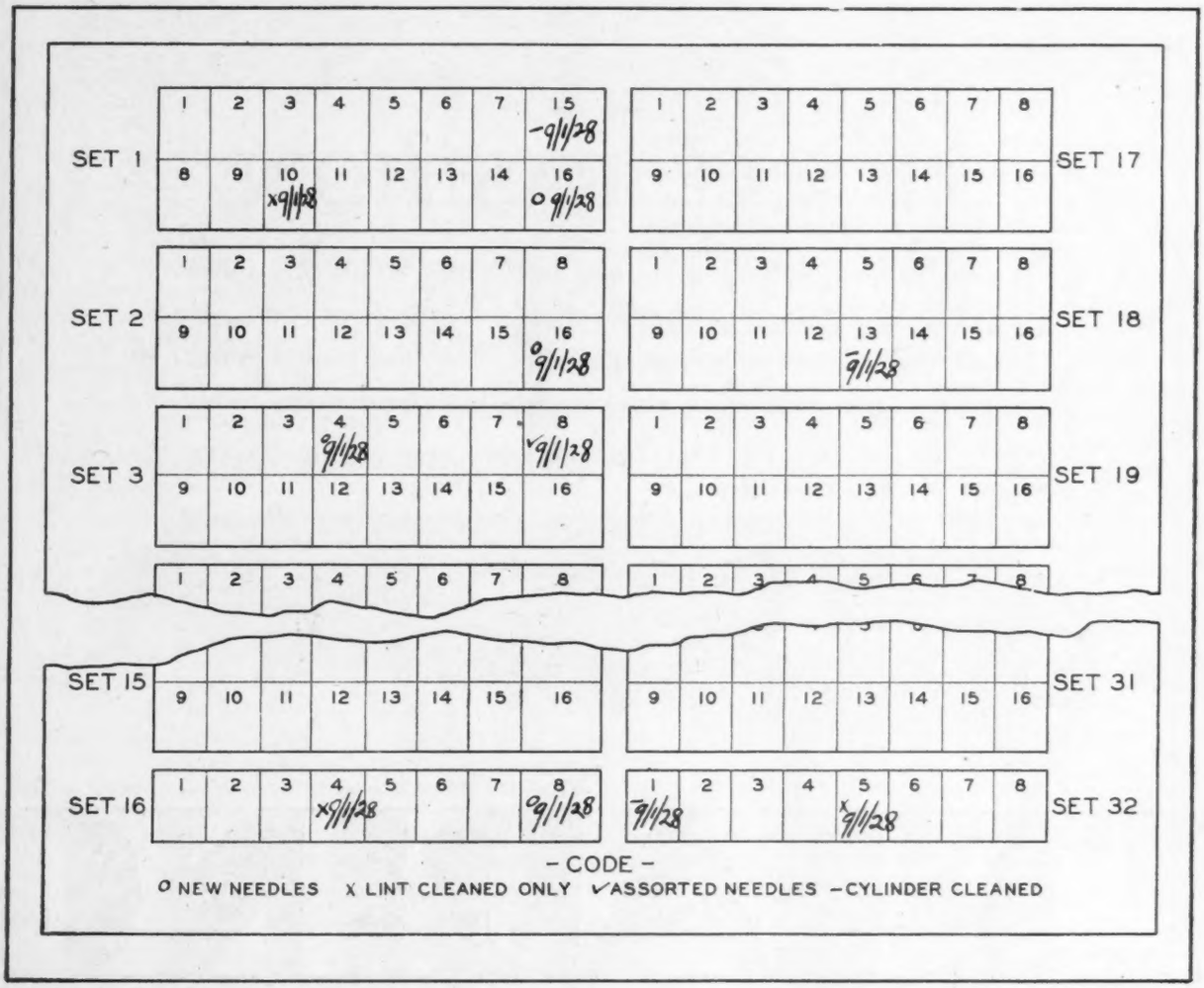
Stopping Loose Stitches on the B-3 Machine.

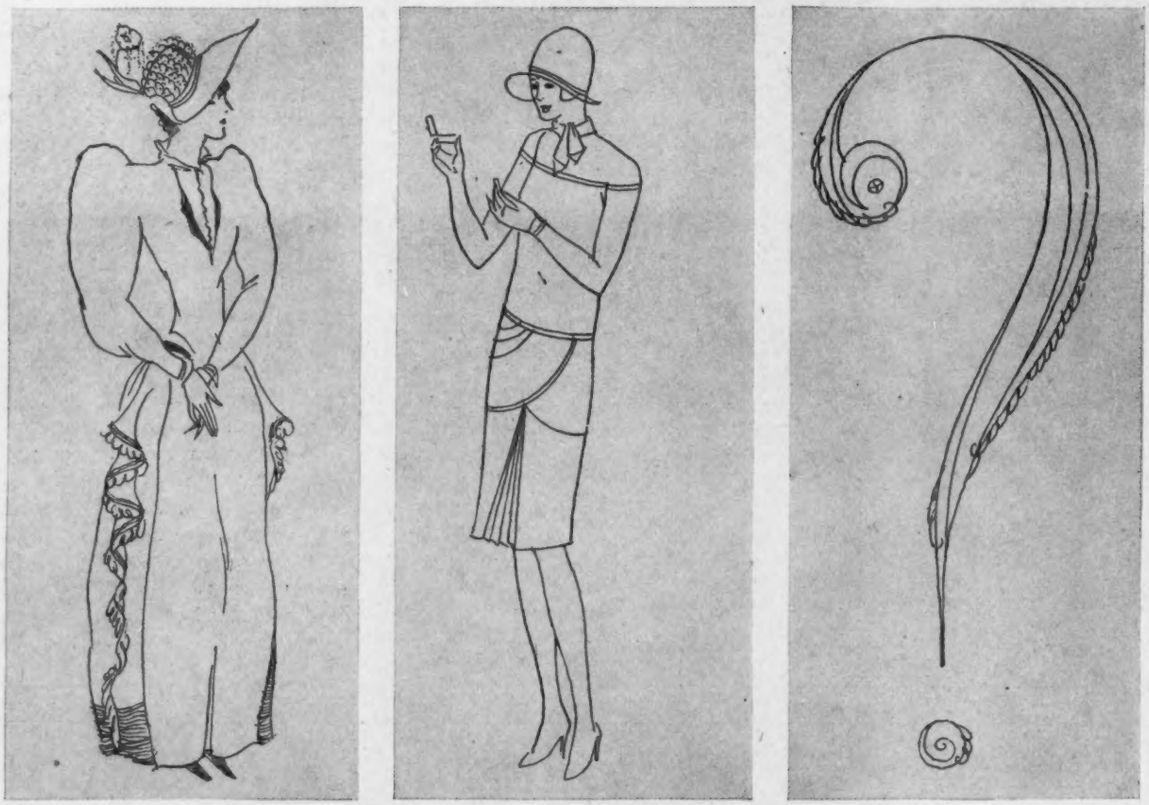
EDITOR COTTON:

Responding to the question of "CONTRIBUTOR NO. 4065". He said he is having difficulty with loose stitches when the first long butt or the first needle taking down the stitch comes in on a Model B-3 Scott & Williams machine. He said this trouble shows up only on rayon and silk; that the mercerized and plain cotton yarn run all right.

At the present time I am not using any rayon; but think I can suggest a remedy for his trouble.

First, I would suggest that he take a file and sort of rough up the bottom of the yarn clamp. Then block up the cam and hold the main yarn out and let it drop in about four needles before the long butt needles come in. I believe also that he, and anyone else having this diffi-

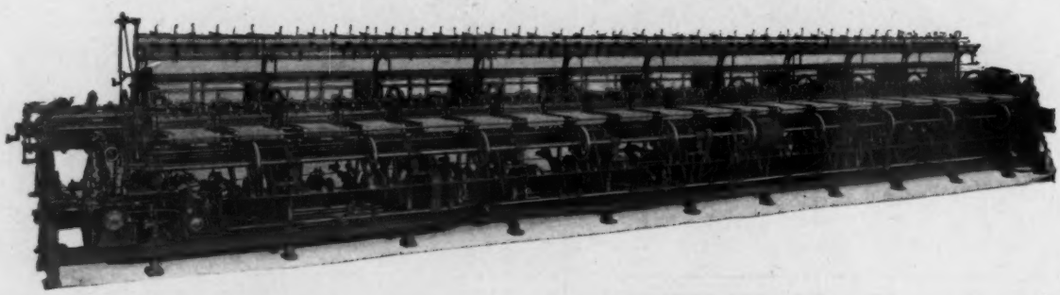




FICKLE FASHION

When fashion dictates a change in hosiery styles the operator of Reading Machines knows that his equipment can easily be altered to meet the mode. Reading Machines built a generation ago are producing stockings bought and worn today.

TEXTILE MACHINE WORKS, READING, PA.



THE READING

FULL-FASHIONED KNITTING MACHINE

culty, would find something of help in the letter published on page 1199 of the September issue of COTTON over my signature.

H. E. (TENN.)

EDITOR COTTON:

In a recent issue "CONTRIBUTOR No. 4065" said he is having difficulty, on Model B-3 Scott & Williams machines, making a loose stitch at the transfer on about the first long butt needle on the coming outside. He states that he has gone over the yarn spring clamp, made it tighter and looser without any effect on this trouble, which he has on rayon and silk only.

There is, in my opinion, one of three things causing this trouble, and I would suggest the following remedies:

1. See that the cylinder band is tight.
2. Be sure that the stitch cam is set properly and is free from nicks.
3. Set the machine so that the yarn drops in on the fourth long butt needle, and with just a slight yarn tension.

RYMI.

EDITOR COTTON:

In a recent number of "KNITTING KINKS" a contributor submitted a problem he is having on the Model B-3 Scott and Williams machine. He said when the first long butt or the first needle taking down the yarn comes in, there is a loose stitch, and he wanted to know how to prevent this. He mentioned that he has this trouble only on rayon and silk; the mercerized and plain cotton yarns running without this difficulty.

I have had comparatively little experience on this style of goods, but it seems to me that he may be dropping his rayon in too close to the first long needle. I would suggest that he drop his rayon in about 15 needles before the first long butt, and possibly this will cause the loose end to knit. However, I notice from the sample submitted, that his rayon is very heavy, and I doubt whether he will be able to entirely eliminate this trouble, using it on this type of machine.

B. P. (TENN.)

Removing Oil Spots on Underwear Tubing.

EDITOR COTTON:

I would like to outline for you to publish in "KNITTING KINKS" a little "kink" which we have found extremely useful in connection with the manufacturing of underwear.

All underwear mills, at different times, encounter difficulties in the dyeing of the cloth, especially if it has much oil or little dark spots on it. If the yarn is spun in rainy weather, under foggy conditions and with the air full of soot, these specks will settle on the bobbin in the spinning room, and then when this yarn is run on the winding machine, and little black streaks will show up on the cloth. In some mills this occasions a tremendous loss in money and seconds every year.

We have developed a formula which will remove these spots. It does not increase the cost so very much, as we run it in the same water with the dye and all chemicals. In 800 gallons of water, or whatever amount is being used, we add from three to eight per cent of soap and two per cent of bleaching oil. This is used every day in the same tub with the dye and other chemicals. Of course it makes the cloth so clean that it will change the shade a trifle, but by using it in every batch, the result will be a perfect match all the way through.

S. A. (TENN.)

Building a Fine-Gauge Seamless Mill (Part 3).

THE DYEING DEPARTMENT

EDITOR COTTON:

My friend Jones, who is building a mill for fine-gauge seamless silk hosiery, came by the other day and we drove down to Pineville for another visit with our old friend Tom Smith—this time to discuss some of the problems of dyeing in connection with his new mill.

We found Tom more or less at leisure, and after we had settled down, Jones asked Tom what equipment he would need for his dyehouse. And Tom replied:

"Well, to begin with, I would fit up a laboratory with all of the necessary equipment for matching shades, such as gram and grain scales, dyebath, beakers, pipettes, graduate cylinders, laboratory bottles and similar equipment. Then I would pick up some bright ambitious high school boy who didn't know very much chemistry, and not too much of anything else, but with a strong desire to know and the energy and faculty to acquire. I would try to find one who had a good eye for colors and a fine sense of accuracy. I would teach him how to match shades and select the proper combination of dyes that will go on evenly without a lot of trick doctoring and stay put."

"You don't mean to discount the college-trained chemist, do you?" asked Jones.

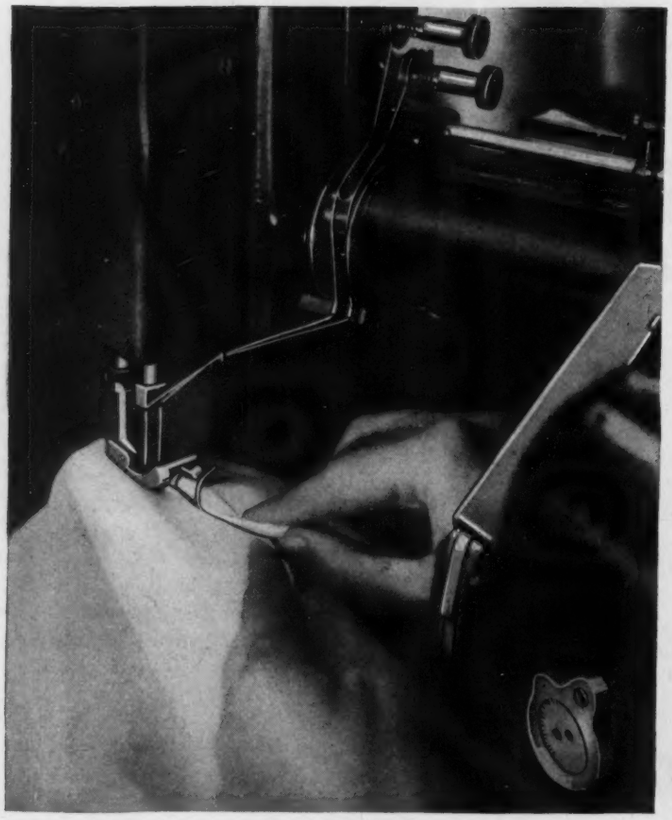
"Not in the least," replied Tom. "Education is what the textile industry needs more than any other one thing, but you can't carry water in a silo. Give the boy the practical experience first, for a foundation to build on, and he won't explode when you fill him with scientific theories.

"You know," Tom continued, "after that boy Lindbergh took to the air and flew a pathless course along through fog and storm to France, the government brought him back home to teach him to read the most modern scientific instruments to give him a finer sense of direction. Apply the same principle to your dye man. When he gets so he can dye silk hosiery well, let him learn all he can about chemistry and the dyeing of other materials.

"But getting back to the dye-house equipment, the next thing I would recommend is water softener equipment. The greatest asset to any dye-house is standardization, and what could contribute more to this than a standardized water supply. Practically all dyehouses use the city water supply which is chemically treated and is variable in analysis. You can run along for several days, matching shades with the same formulae, then all at once, following heavy rains for example, the dye-house blows up and you wonder where all the trouble is. You change methods and formulae and finally, when the water gets normal, the trouble corrects itself. I am convinced that a water softening unit is the most profitable investment that any dyehouse can make, and I would put one in if I was dyeing nothing but cheap cotton hosiery.

"Well, how about the dyeing equipment itself? Which would you recommend?" inquired Jones.

"I have been able to get the best results on a long bath, quadrant pocket, rotary type of dyeing machine," was Tom's reply.



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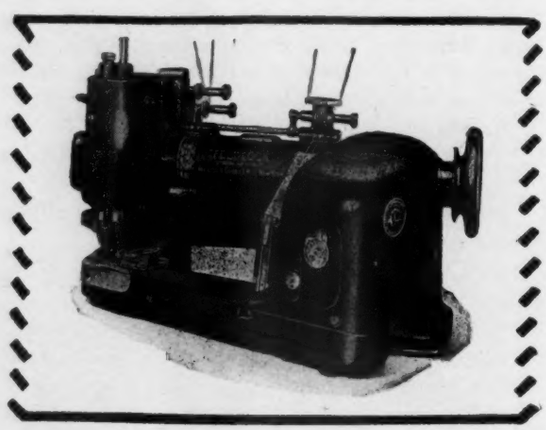

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"Is it necessary to use nets with this type of machine?" asked Jones.

"Yes, and no," replied Tom. "These machines are hand polished and contain no burrs or rough spots, and will not pick the sheerest silk stockings, and will dye perfectly with the stockings loose in the pockets, but to dye level and penetrate the heels and toes and back seams, as they should be penetrated, it is necessary to agitate the goods in the machine, which will cause more or less tangling and in unloading tangled goods and extracting tangled goods, you will break enough back seams and tear enough stockings to more than pay for the nets. Then, too, the dyer's finger-nails, and his overalls, and the dye-house trucks and the extractor cage are not hand polished. The nets also prevent the loose stockings from dropping on the floor, both in the dye-house and in the boarding room. You never saw a boarder lift a handful of stockings from a truck and start to his boarding table that he didn't drop one, and step on it to boot. Then again, dyeing in nets enables you to mix sizes in the same pocket and load the machine evenly to capacity. The mixing of nets with loose stockings, however is not good practice, as the outside finish of the nets is not as smooth as the inside, and the impact of the loaded nets rumbling against the loose stockings will nap them. For these and many other obvious reasons there is an economy in using nets. It is a good practice to carry the inspected stock in the stock room assorted as to sizes, and already shaken up in the nets, four dozen to the net, ready for the dye-house. Then when you get through de-gumming the goods, you can shake them up when transferring them to the dye nets, the same color as the goods are to be dyed."

Jones remarked at this point, "If you dyed and degummed in the same bath it would not be necessary to shake up the goods and change the nets after de-gumming."

"No," agreed Tom, "but when you take your sample after the allotted time, following your established formula, you seldom have to add any more salt or dyestuff to get the desired shade, which is not usually the case with the one-bath method. Adding shading colors to a dye bath after the goods are dyed and tangled is one operation which the successful dyer always tries to avoid.

"There are only two arguments which I have heard in favor of the one-bath method. One is the time saved, and the other is the finish of the goods. The small amount of gum left in the stocking gives it a little firmer feel, but this advantage is more than off-set by the fastness of the dyes. The gum acts as a resist to the dye in penetrating the fibers, and the dye is more or less plaited on, and when the stocking is washed and the gum comes off, the dyes come with it. As for the time saving, there is nothing to be gained in time. You can de-gum 200 pounds of goods in a 200-pound machine and keep two 100-pound machines going constantly on different shades, and as I said before, you don't lose any time shading colors and making redyes. On an average, by de-gumming 150 pounds of goods on a 100-pound machine, and then dyeing the same 75-pound lots different shades on the same machine will consume less time than dyeing the two 75-pound lots by the one-bath method. If it required an extra dyeing machine to use the two-bath method, the difference in efficiency in favor of the two-bath method in my opinion would justify the purchase of the additional machine. On the other hand, I believe I can put through more goods with better matching of shades and better unions, with fewer re-dyes, and less cost, with the two-bath method than with the one."

"Speaking of re-dyes," asked Jones, "What is the lowest percentage they can be run?" To this question Tom replied,

"This is the most abused privilege the dyer has—that of making re-dyes. If it was not possible to dye goods a second time, then the dyer would have to become more efficient and quit making re-dyes. This would mean of course that about half the dyers would lose their jobs and about half of the dyeing machines would have to be thrown out. As a matter of fact, on an efficiency basis there is no excuse for re-dyes other than the oil spots from the knitting, and most of these could be avoided by the proper application of oil and the proper handling. I have seen many 100-pound lots of light shades come through without a single re-dye. However, with the improved stripping agents and improved methods of stripping, there is a growing tendency to make the re-dye bins carry the re-boards, mends, odd lengths and everything that can be disposed of in this easy way. Re-finishing goods is quite an expense and should be reduced to a minimum."

Referring again to the equipment, Jones asked Tom what capacity and number of dyeing machines he would need.

"Let's see," said Tom, "I believe you have 300 knitters which should produce approximately 750 dozen per day, of an average weight of 750 pounds. Are you going to sell your goods to the jobbing trade?" Jones nodded in the affirmative.

"Then," continued Tom, "I would put in one 200-pound capacity and one 100-pound capacity machine. On the 200-pound capacity you can de-gum from 250 to 280 pounds per run and make five runs per day. By running through the noon hour, which is good practice in the dye-house, you can make five dyeings per day from 100 to 140 pounds each, on the 100-pound machine, or an average of 625 pounds per day on the 100-pound machine. Then by de-gumming four lots on the 200-pound machine and dyeing one lot of 200 pounds on the 200-pound machine, your production is easily provided for. By making two 200-pound dyeings occasionally, you can make up for any small dyeings of 30 to 50 pounds that you might want to make in the 100-pound machine."

"What would you do with small lots of 10 to 15 dozen?" asked Jones.

"These are not necessary," replied Tom. "You get out your standard line of colors representing 20 to 30 shades, and you dye these in lots of 100 to 200 pounds. The faster moving shades you can dye in 200-pound lots and the remainder in smaller lots. You carry these standard shades at all times in your stock room. You can dye successfully as little as 30 pounds in your 100-pound machine, and where a customer wants a special shade you should require him to buy as many as 30 dozen. If he does not have faith enough in the shade to put in as much as 30 dozen, then why should you be put to the extra expense of working out a formula and dyeing only a few dozen? If the jobber does not feel a need that will warrant the purchase of 30 dozens of a special shade, then he has no place for it in his line. As a rule, you can make more money on these 'five-dozen special shade fellows' by letting the other man have the business."

"What size extractor will I need?" asked Jones.

Tom replied "Your extractor should be large enough to handle the maximum capacity loading of your 100-pound

machine, which is 150 pounds. Then you will need a 42-inch extractor."

"What about the speed of the dyeing machines," inquired Jones.

"This depends on the size of the machine, the class of goods to be dyed, and other local conditions," said Tom. "The periphery of the larger basket being greater, it would require some less speed on the shaft. As a rule, the machines should run from five to eight r.p.m. However, there is no fixed speed for any given machine, which will work the same under all conditions. It is a good plan to start up a new machine with a wood pulley to give the minimum speed and then experiment with higher speeds by lagging the pulley, finding out what speed produces the best results before ordering the steel or cast-iron pully. If the machine is motor-driven, a provision should be made to vary the speed."

"What kind of installation do you prefer on dyeing machines?" Jones asked, and Tom answered:

"The dye-house should be built with an idea of making working conditions as favorable as possible. There is no need of having the men wading around in water on the floor. The floor should be graded to take care of this. The extractor should be located close to the dyeing machine so as to prevent trucking wet goods across the dyehouse. The machines should be placed on a floor level 18 inches below the dye-house floor. This enables you to set the machine on a six-inch concrete base sill and makes room underneath for the connection of drain pipes and provides a pit for the dumping of waste water. At the same time, the higher elevation in front of the machines makes the doors more accessible to the operator for loading and unloading the machine, and removes the need of the objectionable platform. The water feed line to the machine should be of maximum capacity to expedite the filling of the machine. The steam line from the feed valve to the end of the line should be copper or Monel metal."

"Have you any preference for the style of truck to be used in the dye-house?" asked Jones.

"Yes," answered Tom. "I prefer the slatted truck. After the goods are extracted they should be boarded pretty soon, or allowed to dry to prevent mildew. These trucks can be made of strips 2½-inches wide, and ¾-inch thick placed ½-inch apart. The inside truck dimensions should be: Length, 42 inches; width, 26 inches; depth, 20 inches. These trucks can be given two coats of white varnish, such as "Koverflor," which will produce a glazed finish, and which will preserve the wood and will not wash off."

It was away past time for us to go, because I had to get home before my own mill closed down. We thanked Tom for the time he had given us, and arranged for a return visit in a short time to discuss with him some of the problems pertaining to the finishing department.

T. O. (N. C.)

Testing, Mixing and Applying Dyestuffs.

(*Continued from page* 205)

or the rayon also, and be able to make up a formula with as few dyestuffs in it as possible. The simplest formulas work best, and are easier to control. When more than six dyes enter in a formula there may be nothing wrong with it, but it is best to look around and find a way to eliminate one or more of the dyes by using some other dyestuff.

After completing a series of tests with different percentages, samples are tagged with the amount of dye used, the name of the maker, or dealer, how the dye is applied, at what temperature, the chemcials used, and the date—then stored away in a dark place. There are dyers who keep their dye tests in dark bottles; we keep ours successfully in covered cardboard boxes.

When testing a dyestuff on fabric composed of two or three fibers the same procedure must be followed as for dyeing a lot of goods. The bath must be prepared in proportion of 30 or 40 parts of water to one part of material. The higher figure is for medium and light shades, black and dark colors must be dyed with the shorter bath for the sake of economy because the direct dyes do not exhaust completely, and in the longer bath much of it would go to waste unless a standing bath is kept, and that is seldom done at the present time.

With the proper amount of water, the desired quantity of dye stuff and the temperature at about 140 degrees F., in a suitable beaker, or pot, set in a boiling water bath, the swatch of fabric is entered and worked with a glass rod for about 10 minutes, then from 5 per cent to 40 per cent of Glauber's salt is added and dyeing continued for about 10 minutes longer. For those dyers who prefer to dye the silk in the mixture with acetic or formic acid, at this time the pot is raised from the water bath and left to cool for 10 minutes longer, then an addition of 1 per cent of formic acid—70 per cent strong, or 2 per cent acetic acid 20 per cent strong, is made, and the pot re-entered into the water bath 10 minutes longer; then sample is taken out, washed and dried.

In the latter case, it is advisable to add to the swatch a small piece of the silk part of the stocking and to take it out before the addition of acid to the bath to note the difference in color with and without acid.

(This is the first article of a second series of articles on hosiery dyeing by Mr. White. The next article will appear in an early issue and will discuss correcting a shade in the beaker and the machine.—The Editor.)

Hemphill Issues Patent Notice

Hemphill Company, manufacturers of the Banner automatic knitting machines, Pawtuckett, R. I., have sent the following notice to the circular knitting trade, signed by John Lawson, president of the company:

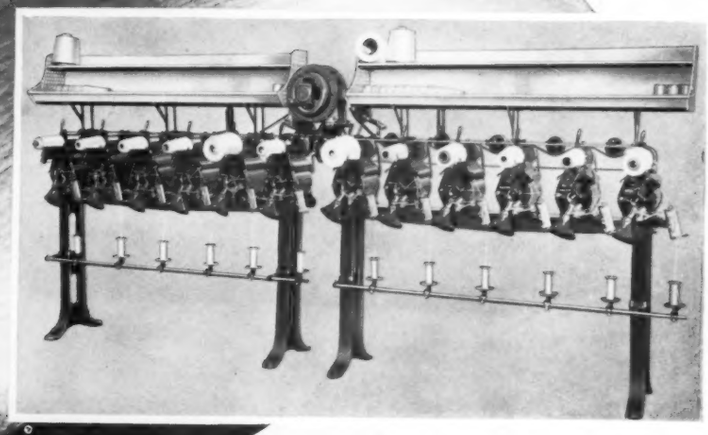
"The Hemphill Company owns and controls United States patents Nos. 1,459,157 and 1,641,590, which patents are directed to the idea of knitting pointed heel effects on certain circular machines of the Banner and similar types. The patents specified broadly protect the Hemphill Company from competition in the circular machine field and unauthorized manufacturing of machines or parts therefor for the purpose of knitting single, double or other pointed heel effects on machines of the Banner type in violation of the Hemphill Company's patent rights will be resisted to the utmost. Infringers through the manufacture of machines or parts therefor intended to provide for knitting pointed heel effects after the manner disclosed in the said patents, or the users of such machines or of the parts therefor will be vigorously prosecuted by the Hemphill Company for infringement of said patents.

"The Hemphill Company has been informed of a claim asserted with respect to double pointed heel effects on stockings, based upon United States Design Patent No. 70,307, but it has rights superior to any claim which may be made based upon such patent and the manufacturers of stockings of said design upon the Banner machines equipped by the said Hemphill Company are advised that such manufacture does not constitute any infringement upon said design patent. The Hemphill Company, upon being given prompt notice and upon being permitted to act through counsel of its own choosing, will defend any suits which may be brought against such manufacturers based upon any such alleged claims of infringement.

"The Hemphill Company is ready to stand back of all Pointed Heel designs—be they single, double or other designs—that the Banner machines are set up to knit when they are equipped or set up by the Hemphill Company's representatives or at its plant at Pawtucket, R. I. However, such designs as are not authorized by the Hemphill Company are not within the above guarantee. Such a restriction is necessary in view of other design patents for variations of the Pointed Heel.

"The protection offered to customers of the Hemphill Company is conditioned upon the purchase of all necessary equipment from the Hemphill Company and the assembling of the parts by the said Hemphill Company, or by its representatives."

JUMBO CONES



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The ideal knitting package of synthetic yarn is a cone of 5¾" traverse, built on a large-diameter cone tube, as represented by the "Universal Jumbo" cone wound on the "Universal" No. 50 machine.

The empty cone tube has an average diameter of 2⅞", and the average diameter of a three-pound cone when wound is 5⅝". The three-pound cone represents the maximum recommended for synthetic yarns, and naturally cones of smaller diameter and less weight may be wound, if desirable.

Starting with this large-diameter cone, the wall of synthetic yarn on a package containing three pounds net is but 1⅜". Glancing at the illustration above of the "Jumbo" cone, you will readily appreciate the assurance of even tension when knitting from a package with large circumference, and with none of the impediments to delivery common to bobbin types of winding.

The "Jumbo" cone, the latest product of the "Universal" No. 50 winder, is the result of exhaustive study and careful development by the Universal Winding Company, collaborating with the manufacturers of synthetic yarns, and with the knitters of this material.

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They will deliver freely, either by rotation or over end, substantially lowering winding costs

Ad No. 233-A. Printed in U. S. A.

The Knit Goods Market

WILL prices for silk hosiery for the first half of 1929 be advanced? is a moot question in the primary markets, and if the affirmative view be accepted, would there be any halting in distributor buying? Many northern manufacturers paying the schedule of piece work wages agreed upon nearly a year ago by Philadelphia mills and the organized workers maintain their profits have been inadequate, especially since an increase in the cost of raw silk. The same complaint is heard in the New York and New Jersey districts.

Jobbers discussing the prospect of revisions have in a number of instances, intimated they would look for slight reductions. This is, of course, a part of the tactics of the buyers and bears no relation to the question at issue when considered from the standpoint of actual market conditions. On the basis of demand for the current season, it would appear that there would be warrant for advances, or in any event, if any were contemplated, this was the time when they might have been maintained. Complaining manufacturers represent that either slight upward revisions must be made or production cost be lowered, and it is not denied that resort to either alternative might cause something of a jolt.

It appears the burden of higher cost rests the more heavily on mills selling their nationally advertised brands direct to retailers. Standards must be adhered to lest the trademarks lose their value, and selling and distribution represent a large item to be added to cost of production. But the trade of these manufacturers looks for present price lists to be continued or, at any rate, that they show no increases. The situation as it affects manufacturers was outlined briefly by Stanton D. Sanson, president of the Ajax Hosiery Mills, Philadelphia, operating plants in Phoenixville and Pottstown, Pa. He points out that while raw silk is costing mills more than in the Summer months, silk suitable for the better chiffons commands a premium, amounting in some instances to $1.50 a pound. "As we must pay the higher market price and a premium as well," says Mr. Sanson, "it is imperative that prices be advanced."

Manufacturers generally are in accord with Mr. Sanson's view, but there has been a disposition to make the best of the season's brisk market and leave the future to developments. As several of the larger mills have sold for deliveries in the first quarter of next year at the 1928 prices, it appears to most factors that prices will remain at about where they have been, although it seems not improbable that, with conditions remaining as they are, mark-ups of the lower grade will be made.

Dealers by exploiting dollar all silk stockings, have created a consumer demand for goods in that bracket, and mills which are able to supply reasonable quality have been in no need of orders sufficient to keep plants running overtime. But it develops there has been so much consumer complaint of much of the dollar chiffons that it appears cheapening has been carried to the danger point and that if the dollar price is to continue, manufacturers will have to restore what was taken out for meeting retailers' notions of just how much they could pay. In the present stage of demand it looks as if mills might to this at the expense of the class of merchants insisting upon regulars for a dollar—that dealers will be put to the test of cutting their cost of doing business. Some have succeeded in effecting economies by splitting their stores, occuping around half the former space and renting the remainder for some non-competing, but collateral line, each being calculated as having the effect of drawing trade for the other. Such has been the practice among some of the smaller hiladelphia shops, and it has been found to work out satisfactorily. Price is the target in the retail as well as the manufacturing trades.

There has been a scarcity of spot delivery seven thread silk hose, for one reason so many mills concentrate on chiffons, usually five thread of 39 and 42 gauge. The latter gauge is regarded the bread and butter stocking, representing maximum fineness in the low price brackets, and manufacturers in the Philadelphia and Reading areas knitting either chiffons or service weight are operating to capacity, numbers of them overtime, and shipping out production. But this is true also of mills operating 45 gauge machines. The Noe-Equl mill, in Reading, selling to retailers, maintains a 21 hour schedule, employing two shifts of operatives. The Vogue Silk Hosiery Co., Philadelphia, 45 gauge four thread silk to top, with picot edge, is on production

Foreign Mills Seek Second Hand Machines

DEALERS in second hand hosiery machinery report an outbreak of demand for 220-needle equipment, understood to be wanted in mills where women's mercerized stockings can be produced profitably. There is wide inquiry also for used machines for children's hose and men's fancy socks for the low price brackets, in which there has been satisfactory business, and recently a Canadian manufacturer of sweaters was in New York and Philadelphia picking up equipment for his mill.

Demand for second-hand coarse gauge hosiery machines borders on the sensational. It is wanted by interests in Germany, and for other overseas nations, destination being usually not revealed by buyers. Representatives of a buyer of equipment to go to Germany arrived late last month to exercise an option which had been taken by cable. What disposition was made of the option has not been ascertained, but it is understood that it did not embrace all the machinery for which the buyers are in quest.

The unusual interest manifest by foreign interests in American circular machinery is viewed by some domestic factors as foreshadowing an intention to engage more extensively in export trade, since American mills are giving less attention to seamless hose while expanding the full-fashioned industry. Whatever may be the explanation, American manufacturers displacing latch needle machinery of coarser than 280 needles seem to have had little difficulty in finding buyers eager for what appears bargain equipment.

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continuously 24 hours a day. These are mentioned as typical of conditions among full-fashioned establishments generally where operating cost is higher than in many localities.

48-Gauge Dip-Dyed Going Good.

Standard 42 five thread picoted stockings go over the counter in many stores for $1.50 a pair. One representative shop with a somewhat exclusive clientele features such a line at $1.35, but either the stockings or the price does not appeal to its trade, according to the management, who state its hosiery sales are falling off, going to chain shops where dollar hose is made an attractive item. While sales of 48 gauge dip-dyed hose have been disappointing to some manufacturers, one might be mentioned as expanding its business in this number. Consumer satisfaction with the stocking is ascribed by the mill to the fact that it has solved the problem of giving dip-dyed hose the appearance of ingrain, while supplying it at materially lower cost than the ingrain.

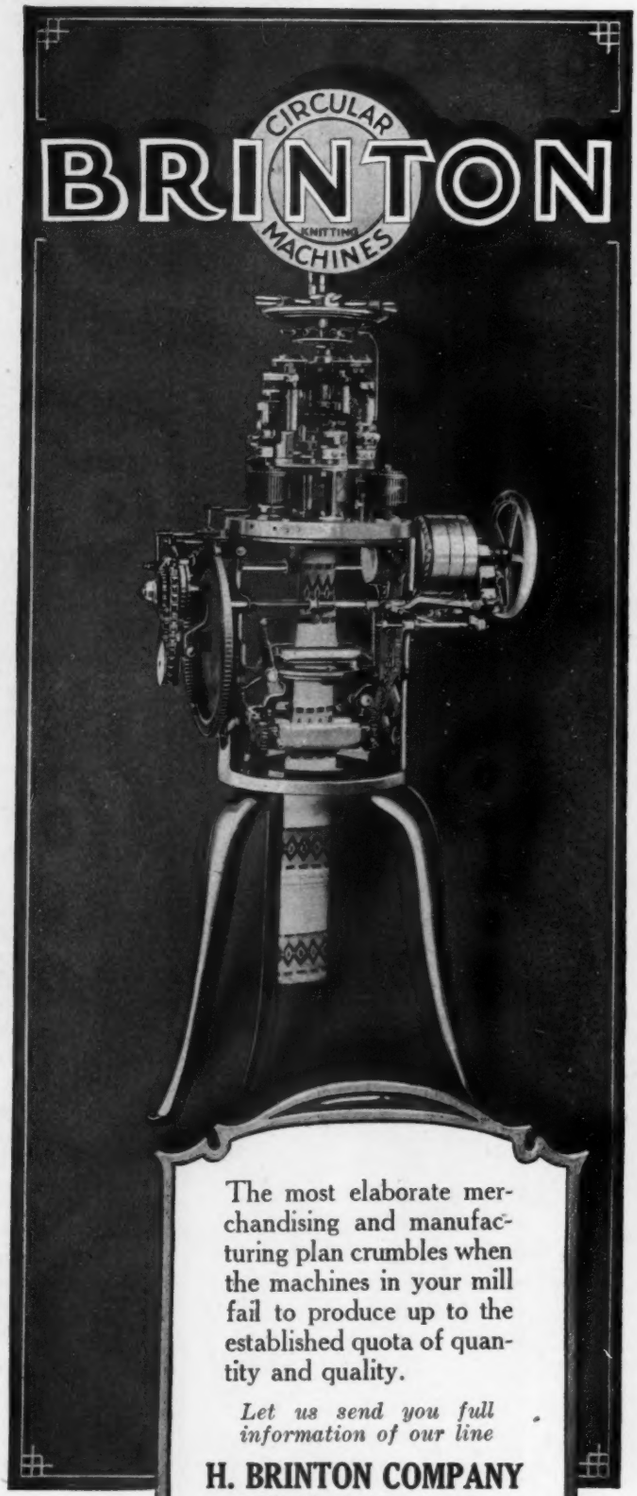
Will the present stage of distribution of silk hosiery continue after the holidays? Factors say it will, and that while there might be a period when the market will be less active, any accumulation of stocks would be absorbed later. Besides, it is pointed out, as curtailment during the summer proved effective in maintaining price steadiness it would be the logical thing to hold production down somewhat in January and February, all depending on developments meanwhile. Primary market interests profess to believe there will be no lessening in demand except as ordinarily is witnessed after the year-end holiday rush.

Some attention is given to manufacturers' stock reports to the Commerce Department. It is indicated that stocks at the end of September, notwithstanding production during the month was less than in August, were heavier than at the end of September last year. But there is little doubt that more than this excess went into distribution in October and November, two months of activity not paralleled for some time.

Varying Situation in Seamless.

While some of the seamless mills report no letdown in demand, others state they have found it expedient to reduce output of anything coarser than 300 needles. So far as can be ascertained, not a 300 needle machine has been idle in months, and it is pointed out that no used equipment of this type is for sale, while manufacturers are disposing of 260 and coarser gauge machines as fast as they can find buyers.

A representative mill is in arrears with shipments of 300 needle hose, it is stated by the management, while other equipment is kept going more for holding down plant overhead than for the profits to be gotten out of the product. New York representatives reported as early as October that they had sold their production to January, their lines embracing pure thread silk, rayon and silk and rayon in combination. There is a good outlet for rayon and combination yarn goods, manufacturers reporting especially good results from knitting the non-lustre yarns. Viscose Dulesco seems to have had a good run, and there is heard much satisfaction with the use of Enka Discrella, another lusterless thread. A few mills in Philadelphia are trying out Glanzstoff, only recently introduced in this territory.



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Bemberg Chiffon Numbers Discontinued; Service Weight is 85 Cents Special.

IN THE absence of official dependable information of the production of Bemberg hosiery there are available no figures for showing whether it is increasing or declining. The only recent disclosure of real interest on the subject is that in relation to chiffons, which were brought out by two Philadelphia manufacturers in July. One of these, the Philadelphia Knitting Mills, Inc., which was the first full-fashioned hosiery establishment in Pennsylvania and the third to be set up in the United States, has discontinued making Bemberg chiffons. The other was the Oliver Knitting Co., from which no official statement for publicity has been received, although it is unofficially stated that this company also has abandoned the number.

When Bemberg chiffons were introduced they were widely heralded as designed to sell at retail for $1.50 to $1.75 a pair. They were featured in an October special sale of a Philadelphia department store for a dollar a pair. Since then little has been heard of them. So, it appears, Bemberg chiffons have passed out as representing a short time experiment, while there is no little speculation in trade circles on the question whether the service weight is as popular as it once was.

Originally, Bemberg service weight hose sold regularly for one dollar a pair and dealers complained they could not get enough of them. While the dollar price still obtains, at least one department store has been offering them on one day of each week for 85 cents. While some jobbers carried them, they never were profitable to wholesale distributors, and retailers did not take down their usual margin of profit. Reports of this character circulating in the trade have been responsible for an impression that Bemberg is not so popular as some months ago.

The Berkshire Knitting Mills was the larger producer of Bemberg hose and for a time let it be understood that it was unable to supply the demand. A few weeks ago it was announced that at last output had caught up with demand. It must be left to conjecture, however, whether production was was increased or demand declined.

The Department of Commerce statistics for September, in a compilation of reports from 344 identical mills, accounts for a production of 79,987 dozens of rayon full-fashioned hose, comparing with less than 2000 dozens in the corresponding month of 1927. These figures doubtless embrace the Bemberg production of some few mills. While full-fashioned rayon scored an enormous gain, a loss in output of seamless, in which Bemberg has not been used, is shown, the figures coming from identical mills being 62,775 dozens for September this year and 95,169 for September of last year. It is pointed out by manufacturers analyzing these reports that the new types of rayon, the chief characteristic of which is its freedom from the objectionable luster, did not come into general use until July last, leaving it not well represented in the statistics of hosiery production. In this connection it is noteworthy that the indicated output of full-fashioned silk and rayon in combination in September was nearly 100 per cent greater than in the corresponding month of last year, while in the circular knit division there was a drop of over 35 per cent. One conclusion to be drawn from the showings of mills reporting to the Department of Commerce is that full-fashioned pure thread silk is steadily increasing its lead over all

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R. D. McDonald, 924 James Bldg., Chattanooga, Tenn.

AMERICAN YARN AND PROCESSING CO.

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other types. This deduction appears to have ample support in the fact that, despite the very great expansion in this industry, manufacturers apparently doubt that production is in excess of normal demand.

Men's and Juvenile Hose Present Several Angles

SOME irregularities have appeared in the primary markets for men's and children's hose, in which the style equation figures as a deterrent to swift operation by wholesale distributors. It appears that production of men's fancies for the low price bracket is fully up to market demand. There is, however, no lack of orders for 25 cent lines, a few mills as long ago as October declining orders for deliveries this year. But the business seems not well distributed among manufacturers, some finding it expedient in November to hold output down pending the next buying movement for Spring.

The bread and butter numbers in men's fancies are of lines to sell for a half dollar a pair. These in the more widely accepted designs have been and still are ready sellers, and in this division there also has been an over-sold condition as to certain mills specializing in having new patterns follow closely on previous strong sellers.

With the knitting of patterns much facilitated, and cost brought down to a minimum, it appears that novelties on the chaste order will continue to rule strong. Some mills have, however, come on the market with plain color combination yarn half-hose which their sponsors believe will

Redyeing and Return of "Seconds" Give Hosiery Mills Much Trouble.

BUYERS of seconds of silk hosiery are reported taking more liberties with manufacturers since much of what is sold for regulars has been obtainable at extremely low prices. According to mills which have had bitter experiences with returns of irregulars, buyers frequently reject stockings showing the slightest flaw such as ordinarily is overlooked in inspection of goods sold as not of first quality. This in itself is bad enough, manufacturers point out, but tolerance is taxed to the limit when irregulars from one mill are sent back to another from which shipments had been received, and in two cases reported a few weeks ago a lot of rejects contained a few pairs of stockings that had been worn and, doubtless, returned to retailers. "We are having more trouble over returns of seconds than ever we had with first quality goods," it was stated by an executive of a Philadelphia mill. "Another matter that gives us much concern is the return of light colors for re-dyeing," the manufacturer continued.

"We are not partial to re-dyeing, but do it for the accommodation of customers," he said, "but draw the line when the customer holds out for 100 per cent return of the goods sent us. No dyer can re-dye without having some mishaps. Usually when perfect goods are sent us and not 100 per cent of perfects are returned to the merchant he puts in a claim, and if we do not concede it, deducts the amount asked for from his next invoice. Now, what are we manufacturers going to do about it?" he asks. He says that ordinarily it were better to sacrifice slow moving colors and replace them with fresh goods, that usually a loss must be taken, in any event.

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have a wholesome response. There is some confidence in what are referred to as necktie shades for men's socks. But the fact remains that manufacturers of both plain and fancy are busier with the latter, while reporting some increase in the call for good grades of silk in solid colors.

One of the leading mills manufacturing misses' sports hose was idle for some weeks, this Fall, while the market was hesitating. Low price lines in pattern have been sold well up, while the higher price and more artistic has been lagging. As buying for Spring becomes more general it is expected the situation will be much improved. There have been no developments of note in juvenile lines such as to indicate trend, leaving the markets somewhat tame, with brisk spots here and there and some mills shipping out capacity production. Boys' golf hose continue a leading item in the juvenile division, most manufacturers having a better than the average season business.

Infants' socks have moved into a better position. Practically all the leading jobbers and chain stores having entered heavier than the usual orders, and some repeats are coming through. There are, however, small jobbers who were not expected to place initial orders until December.

Several manufacturers of infants' socks report substantial business in women's bootees, also referred to as ankle hose and sportettes, which are expected to be extensively worn with the beginning of the Spring season. The question is, will women in anklets dispense with long hose, or wear them over their silk chiffons? Few persons in the trade look for women's socks to promote the bare leg craze except at the bathing resorts.

Belated Demand for Winter Underwear; Light Weight Mills Operate Overtime.

LOOKING back over a year full of perplexities in the marketing of underwear, manufacturers aim at means for escaping some of the difficulties next year with which the trade was beset in 1928. At this writing it looks as if there will be no all-around offering of men's heavy weight cotton ribs for 1929 before the first week in January, although it is regarded not improbable favored jobbers may in the meantime be given opportunity to look at samples and get a slant on prices.

Some mill heads hint at slight advances over openings for the current season, when, it appears, cotton was fractionally lower than at the dawn of the opening for next year. Besides, it is pointed out, most mills this year operated on the thinnest possible margin of profit. This, however, may be ascribed in part to unusually late buying while distributors were waiting for seasonably colder weather, and, in sequence, part time operation of plants, which obviously adds to overhead cost. Climatic conditions, and the growing tendency on the part of distributors to buy as they sell, are largely the explanation for the year's unsatisfactory business in heavy weights.

It has been suggested among leading manufacturers that the first step toward steadiness at the outset of the 1929 campaign would be to defer the opening until it has been demonstrated that distributors are ready to operate. In recent years mills have been trying to force the buying. As a general proposition, the results have been unsatisfactory, the markets at times approaching a stage of mild demoralization. This year, however, in spite of buyers'

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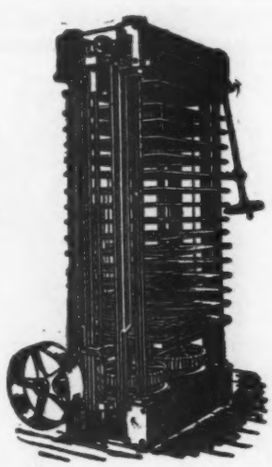

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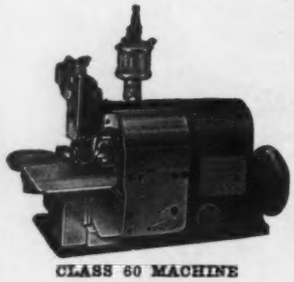

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tardiness, prices have been adhered to with a reasonable measure of firmness, some shading being reported on low end lines in November, when reorders were lagging.

There seems no doubt that a month or two of severe weather would disclose sadly neglected stocks, for even as late as last month buyers were simply filling in, despite the fact that retailers' commitments have not been on a scale commensurate with prospective winter needs. Although stocks generally are believed to be the lowest in December in any recent year, jobbers seem to be making no provision for a January rush, the rank and file working toward low inventories, particularly as they hold to the view that prices for next year will be no higher, except possibly on sub-standard lines. Most interests doubt that there will be any markup on the higher price goods. So, while there is some confusion of ideas in this respect, a late opening is favored.

Men's light weight underwear, selling rather freely for winter use, is fairly active as a whole especially so in relation to certain types. Where manufacturers of nationally advertised branded lines of men's knitted garments are co-operating with distributors and maintaining an intensive campaign, there has been taken considerable business in cottons for deliveries scattered over the first three months. This was revealed in a recent report of the Schofield Shelmire Co., wholesale distributors of knit goods in Pennsylvania, of sales this year of a well known line and orders for 1929, several other jobbers having a like experience with nationally known brands which they are handling. It would appear that cotton staples are moving satisfactorily, in spite of competition with rayon and the great variety of construction of that fabric. But an excess of style is causing conservative distributors to contract in accordance with indicated needs as pictured in the retail trade.

By way of illustrating the wide range of style and construction in rayon underwear, a New York mill announces it is offering 41 numbers of men's women's and children's knitted of Bemberg as a whole and in combination. Nine of the numbers are in men's lines. Other mills are offering a complete range of men's underwear of chemically produced yarns other than Bemberg, so jobbers, it would appear, must reckon with their individual trade before making commitments for distant deliveries.

The complexity of the situation as represented in so many types obviously is a factor in the disposition to defer contracting so long as may be consistent with facilities for deliveries from mills. Yet, trading in underwear for Spring and Summer is at a good stage, and at the moment the outlook for the next season is decidedly bright, and it may be significant that the more satisfactory conditions prevail in standard goods. Styling has developed more of the dress-up drift.

Manufacturers of women's rayon underwear have been, in instances, operating plants day and night, as was usual in recent years during the pre-holiday manufacturing period, more activity existing this year than in 1927, according to some leading mill chiefs. There also has been and still is healthy demand for women's cottons, both light and medium weight, some manufacturers reporting a larger volume of business than in 1926 and 1927. Their increases may be due in large part to the fact that quite a few cotton underwear mills have passed into the discontinued class. Briskness in underwear extends to children's lines, this, however, representing much business that ordinarily is placed earlier in the year.

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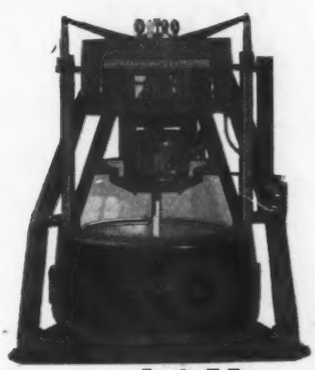

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Made in 5, 10, 25, 50 and 100 lb. sizes.

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SAMPLE DYERS

Fair Amount of Business Booked At Opening of Sweaters for 1929

THE opening of sweaters about the middle of November, for the 1929 seasons, seems to have been conducted in more orderly fashion than on a number of occasions. While it is too soon to go into details as to results, manufacturers generally report a satisfactory reaction to their offerings, with the distributing trade accepting prices as consistent with raw material cost.

Manufacturers commenting on the opening report their regular trade keenly interested in women's sweaters for Spring, and it appears specialties are moving in stronger volume than staples. This is interpreted as indicating continued gains in sales of women's coats and foreshadowing a novelty season, in which cricket coats on the moderately subdued order promise to play fully as conspicious a part as this year.

While it is believed there has been a fair amount of business placed for Spring, there appears to be hesitancy on the part of jobbers to contract for Fall lines, leaving staples to be taken care of some time in the early part of next year. It has yet to be shown whether shakers will be as popular as they were a year ago. Lumberjacks are again being pushed by several concerns at a rate that leaves the future for heavy knitted coats somewhat problematical. There is also the leatherette coats, in which imperviousness to water is stressed, and these also may cut into the sale of knitted coats for heavy wear. Hence the tardiness of many jobbers to contract early for Winter sweaters.

It looks at the beginning of December as if mills generally will have enough business to carry them through the year and that, with the orders taken at the November opening, will at once put 1929 goods in process. This is to be expected especially of manufacturers of accepted standards who have proved themselves masters of the art of distributing mill product. For a time in November, following a period of seasonal activity, there was a slowing down in many of the mills, a brisker situation developing after the curtailment.

Link-Belt Drives Now Available Up to 60 H.P.

Four years ago the Link-Belt Company announced that chain drives from one-half to ten horse power would be available from stock as a joint result of standardization and quantity production. At the end of two years the range of drives, obtainable from stock, was increased to 15 horsepower. At the present time, their latest silent chain publication, Book No. 725 announces, these drives may be now ordered from stock up to 60 horse power. This plan does not affect the range of horse powers available in the silent chain engineering drives which the company furnishes to industry in general, in drives up to 1,000 horse power and over. Link-Belt Company's production of silent chain drives is concentrated in one plant, the Dodge Works, Indianapolis, Ind.

Power Plant Equipment Co. Changes Name.

The Power Plant Equipment Company, Incorporated, announces the change in the company name to The Marley Company. The personnel and policy of the company will remain the same, the change in name being to associate it more closely with the company's product. The main office continues at 1737 Walnut Street, Kansas City, Mo. A direct branch office of The Marley Company has been opened at 342 Madison Avenue, New York City.

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Children's Knit Undies in Color Patterns Grow in Popularity

REPORTS received by the style and merchandising division of the Associated Knit Underwear Manufacturers of America from the underwear department of the John Wanamaker Philadelphia store, that has for some time been stocking the various types of Stencil-knit underwear for children, show that these little undergarments have been attracting a great deal of attention, and serve to brighten up the childrens' underwear section. It was said that, aside from the attractiveness of the unique designs and coloring, interest has been created in the department in knitted underwear in general.

The Industry division of design has prepared for distribution to buyers in leading style stores having underwear departments, a four-page folder which features the Stencilknit offerings of both models and patterns as shown by the Wanamaker store. The folder contains swatches illustrating the quality of the materials, and the pattern effects, as well as attractive sketches in colors of the models, together with detailed descriptions. Buyers are advised in these folders that Stencilknit garments are available in limited quantities and can be secured from the central bureau of the Industry to enable them to make initial showings in their stores as an "attention getting" test. The buyers are also informed that this is a service intended to feature these new types and style models through exclusive stores in the United States.

Among the Knitting Mills

IT IS reported that the Aycock Hosiery Mill, Bridgeport, Ala., is considering building another mill for the manufacture of knitted silk underwear.

It has been announced that the Union Mills, at St. Johnsville and Herkimer, N. Y., are considering moving to Selma, Ala. The plans include the erection of mill buildings and warehouses. Robert & Company, Engineers, Atlanta, Ga., are said to be making the appraisals.

The Richmond Hosiery Mills, Rossville, Ga., will build an additional mill for the manufacture of full-fashioned hosiery. The cohtract has been awarded to Mark K. Wilson, Chattanooga, Tenn.

The William Carter Company, Macon, Ga., has acquired additional land for the enlargement of the hosiery mill.

The McDonough Hosiery Mill, Inc., McDonough, Ga., has been incorporated to manufacture children's fancy sport hosiery. The new Standard H knitting machine with the eight step attachment will be installed. D. A. Hood is superintendent and manager.

Construction work is almost completed on the first unit of the May Hosiery Mills, Burlington, N. C. The installation of the full-fashioned hosiery machines will begin in a short time.

The Esther Hosiery Mills, Graham, N. C., is erecting a plant for the manufacture of women's pure thread silk hosiery.

A new brick building is being erected at the Ruth Hosiery Mill, Durham, N. C. Six full-fashioned hosiery machines will be installed at the present time.

It is reported that within the next few weeks work will be started on the addition of the full-fashioned mill of the Wiscassett Mills Company, Albermarle, N. C.

The Hatch Full-Fashioned Hosiery Company, Belmont, N. C., has let contract to W. O. Pratt Co., Mount Holly, N. C., for the erection of a one-story hosiery mill, 90 x 180 feet.

A training school for full-fashioned knitters, loopers, seamers and toppers has been established in Philadelphia, Pa., by the Peerless Machine Co. The school opened October 1st with a reported enrollment of 50 student knitters who will pay ten dollars a week for instruction and are assumed the complete course in 30 weeks. Seamers pay two dollars per lesson, either day or night. For the purpose of training knitters, the Peerless Company installed two second-hand 39 gauge machines.

Zenith Hosiery Mills, established in Philadelphia, Pa., by Otto Kuehnert and associates, will start on production sometime in November, with six high speed 45 gauge leggers and two footers. The company has taken space for the addition of eight more machines. For the present the product will be sold in the gray.

The Trenton Cotton Mills, Trenton, Tenn., have been purchased by the Kansas City Knitting Corporation, Kansas City, Mo. The company plans to use the plant for the manufacture of mesh meat bags.

Organization under the Delaware laws of the Campe Corporation, formed by Campe Corporation of New York, Century Beverly Knitting Corporation and the Ballard Knitting Company, has been announced. It is said that this unit will be the largest producer of women's rayon and cotton underwear in the United States with an annual production of 30,000,000 garments.

The Ajax Hosiery Mills, which a few months ago removed its full fashioned plant from Philadelphia for getting a lower production cost, in November began operating ten 45 gauge Reading machines in a new building just completed in Pottstown, Pa. This represents one third of the total number of fine gauge machines to be installed in the Pottstown mill. The company also is occupying two mills of recent construction in Phoenixville, Pa., where a total of 71 machines are in operation night and day. The output of all the mills is sold direct to the retail trade.

It is reported the Rosedale Knitting Co., on the border of Reading, Pa., which has completed the foundations for an additional mill, contemplates an extensive expansion program, and eventually may have a factory second only to that of the Berkshire Knitting Mills in point of production. It is stated unofficially that the building will be of three stories, each floor to cover an area of around 30,000 square feet, and that one floor will be given over entirely to looping. The company is sold well into 1929 on its popular price numbers.

The Revere Hosiery Mills, Philadelphia, is operating Wildman 45 gauge machines in the full-fashioned mill recently established in Riverside, N. J., and has been looking for knitters to train operatives. The company makes denial of a report that it purposes employing female knitters.

The Ballard Knitting Co., Pottstown, Pa., manufacturers of children's underwear, plans to erect an additional manufacturing building. The company is one of six underwear manufacturers which a few weeks ago were merged into the Campe Corporation, for which a Delaware charter was obtained.

Statistical Abstract of the United States.

The fiftieth annual issue of the Statistical Abstract of the United States has been recently published. It represents a digest of data collected by all the statistical agencies of the National Government, as well as those of a considerable number of private agencies as well as one or two states.